ENGINEERING NEWS-RECORD

MAY 21, 1959

PRICE 35 CENTS

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- New way to make joints in concrete pavement p.54

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A record: Precast arches span 160 ft

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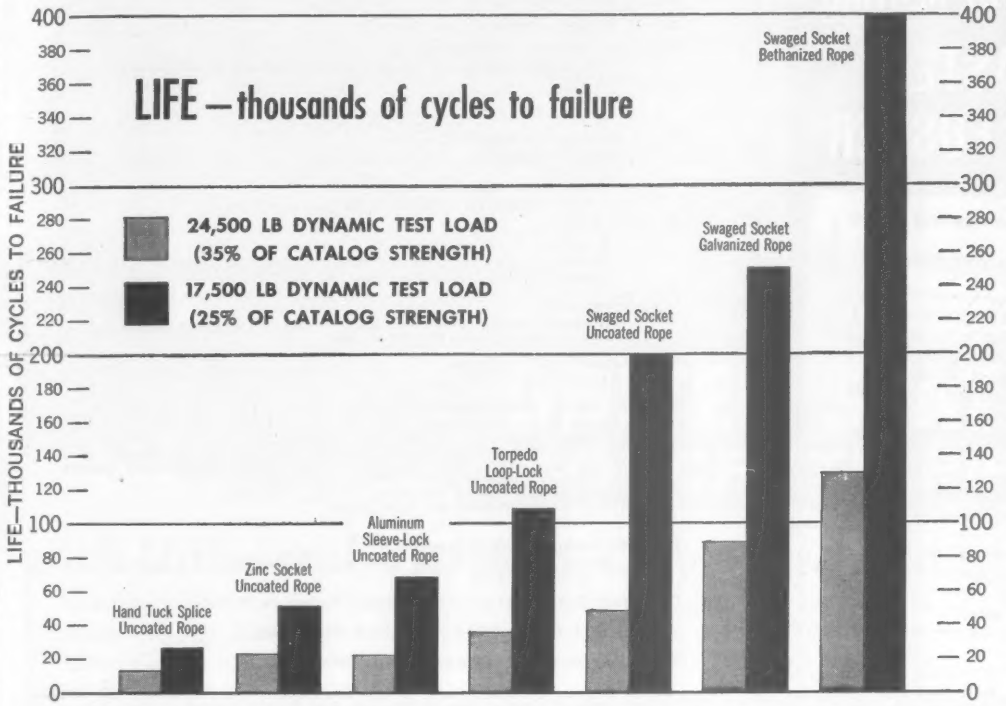
TWO-YEAR STUDY REVEALS FACTS ON BOOM PENDANTS

Swaged socket proves best in exhaustive torture-tests



More than two years ago, Bethlehem began a research program to determine: (1) the type of end-fitting that would best prolong the life of pendants, and (2) the kind of wire rope that would stand up longest in this service.

Field research was carried on simultaneously with gruelling laboratory tests simulating field conditions. This research was wholly objective. Our purpose was to find *answers* . . . not to confirm preconceived notions.

The dynamic tests convinced us that the swaged socket is best by a wide margin. These tests were cruel, impartial. They showed that in dynamic holding-power, the swaged socket is unsurpassed. They also revealed a less obvious fact: that the swaged socket *distributes* the stresses occurring in the rope near the terminal fittings, instead of creating points of stress concentration. Result: longer pendant life.

The rope designated "Bethanized" in the above graphs was constructed of redrawn bethanized wire. The uniform, ductile zinc coating, applied electrolytically, acts as a cushion and lubricant between the wires in boom pendant service. Moreover, bethanized rope has the added advantage of high corrosion-resistance.

As shown by the graphs, bethanized rope with swaged sockets far outperformed hot-dip galvanized and bright ropes with various types of end-fittings. For further information, write or call us at Bethlehem, Pa. Our engineers will gladly give you details.

When replacing your present pendants or buying new equipment with pendants, specify bethanized rope and swaged sockets.

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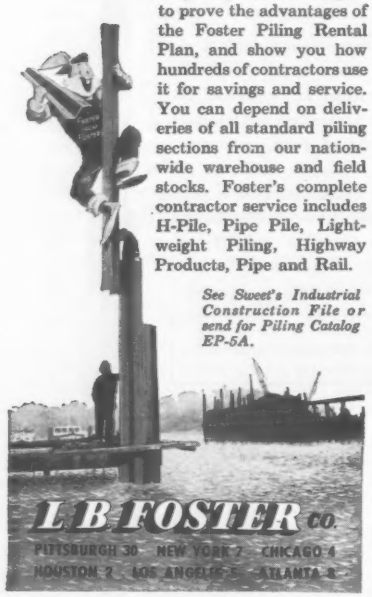

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EIGHTY-FIFTH YEAR OF PUBLICATION

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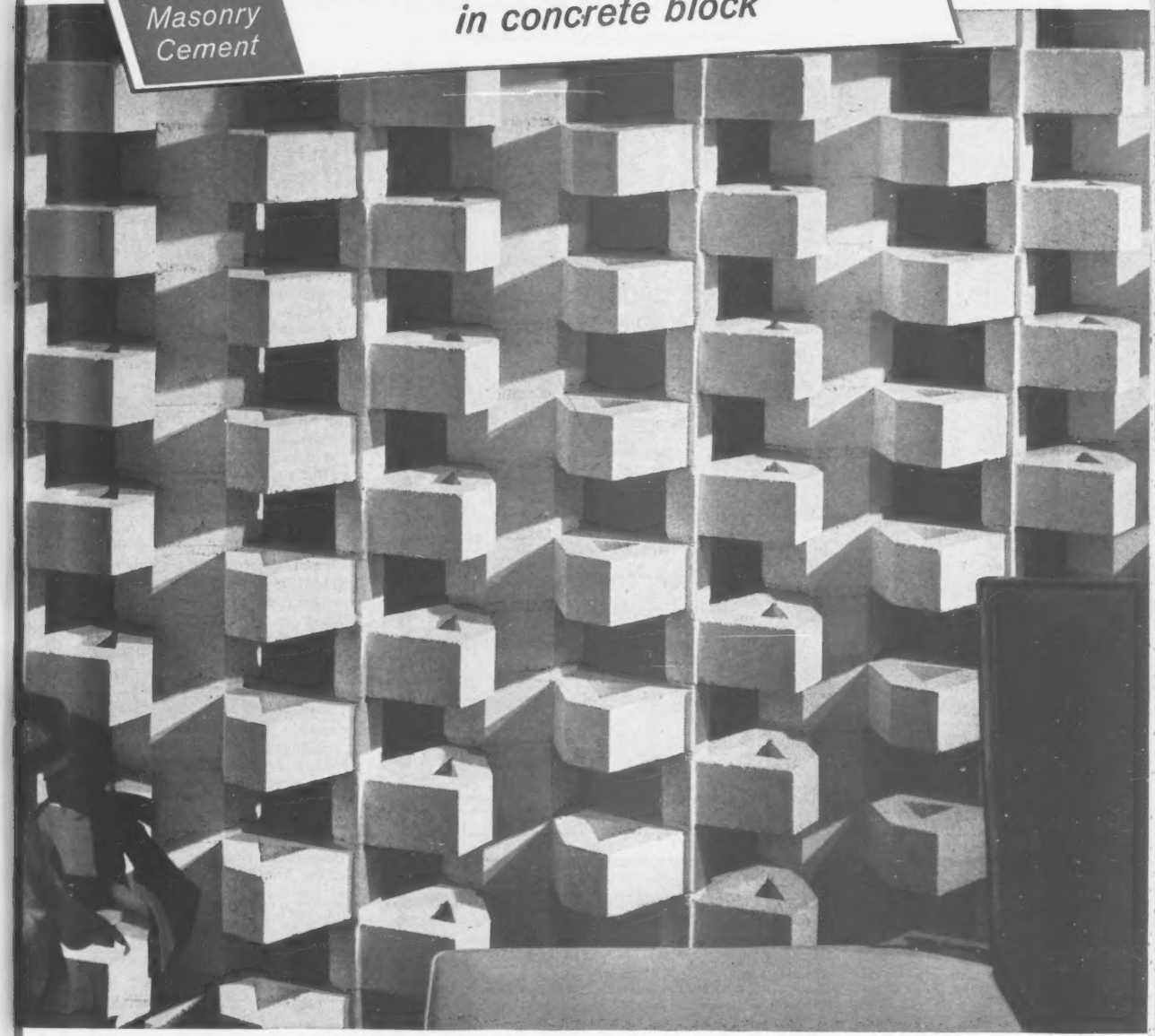
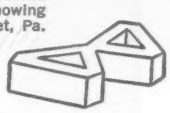
Atlas Masonry Cement

Great new things are shaping up in concrete block



Exciting new masonry walls, exterior or interior, are made possible with decorative masonry units now available from concrete block manufacturers. For example, this unusual masonry wall was created by Architect Victor Lundy of Sarasota, Florida, for showing at Cleveland meeting of National Concrete Masonry Association. The block was produced by Shaffer Block Works, Somerset, Pa.



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Reader Comment

Against Foreign Aid

SIR—It is disappointing to read in an editorial in a respected publication like yours that "Expensive as it is, foreign aid is indispensable to our national security" (April 2, p. 100). Could it be that this is a sad, but prophetic, indictment of our times? An indication of the decay of our moral fiber; a decay which has resulted in the death of many great civilizations? Have we as a nation slipped so far that we must depend upon hired mercenaries for security?

Foreign governments have used American tax money to pay for socialism in their countries. European countries have reduced their public debts and decreased the tax load which their people carry—with American foreign aid which increases our national debt and burden of taxation.

Your editorial states: "All signs point to the necessity for continuing foreign aid indefinitely to assure ourselves of militarily strong allies . . ." Many Congressmen in favor of foreign aid also use this line of reasoning in an attempt to prove that foreign aid has welded the free world into a mighty unified force to resist Communism, and has stopped Soviet aggression. They ignore the fact that since America's postwar aid began, the Communists have conquered more than 600,000,000 people: all of China, half of Indo-China, Tibet, and more than a dozen states in Central Europe. Where were these "militarily strong allies" from Japan, France, England and India when 150,000 American GI's were dying in Korea?

In any consideration of the value of foreign aid we must recognize two obvious facts: one, that the responsibility of the American government, according to the Constitution, is not to defend the world, but to provide for the defense of America; and two, that every nation in history which has depended on hired mercenaries for its own defense has been destroyed—with the mercenaries taking a leading role in the destruction!

WILLIAM H. LONGENECKER, JR.
Coachella, Calif.

▶ What do you mean, indispensable? The U. S. has spent since the Marshall plan an amount equal to the national debt—with mighty little to show for it.
(Reader Comment continued p. 12)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

Driver Sues City For Car Damages

A claim for $10,000 against the City of [redacted] was filed yesterday by [redacted] for personal injuries and damages to his car in a mishap Aug. 16 when it hit a barricade.

The car hit a barricade which the claimant says was "owned, directed and maintained" by the city. The barricade had no warning lights.

[redacted] was severely injured and his foreign-make sports type car was damaged extensively, he asserts.

[redacted] claims he was driving west in [redacted] m. when an-

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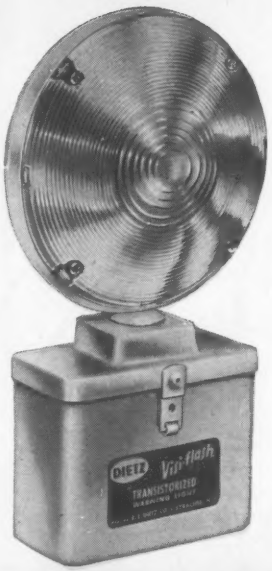

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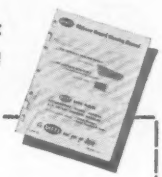

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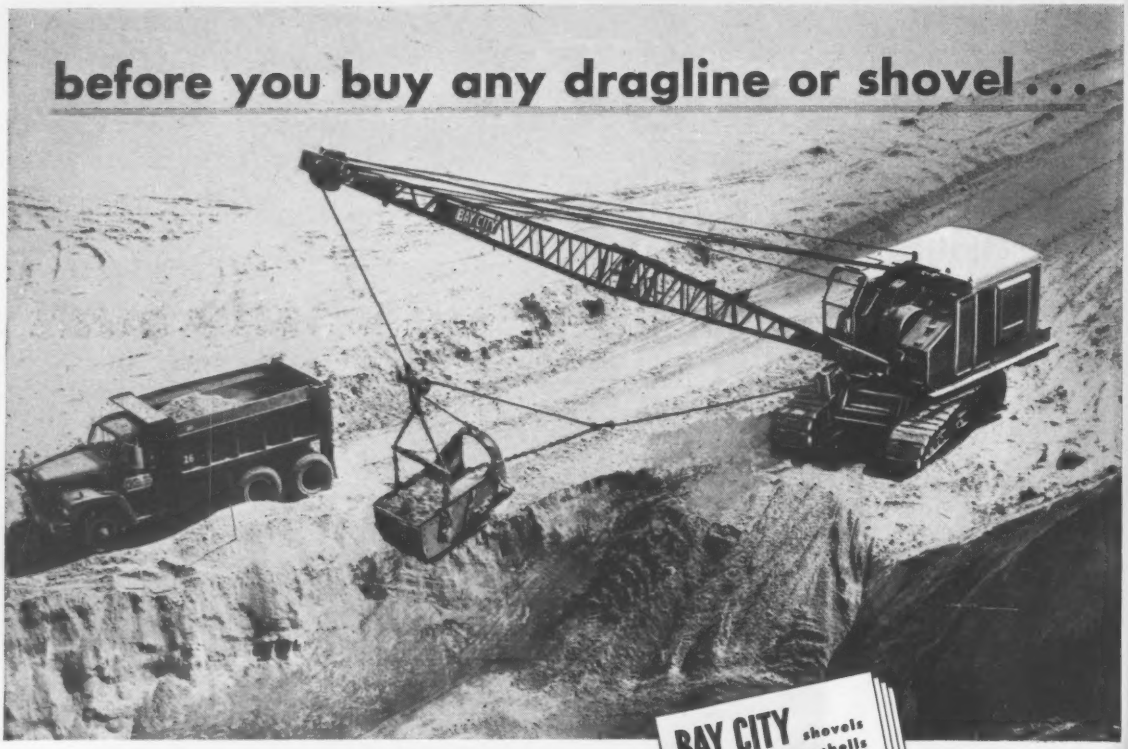

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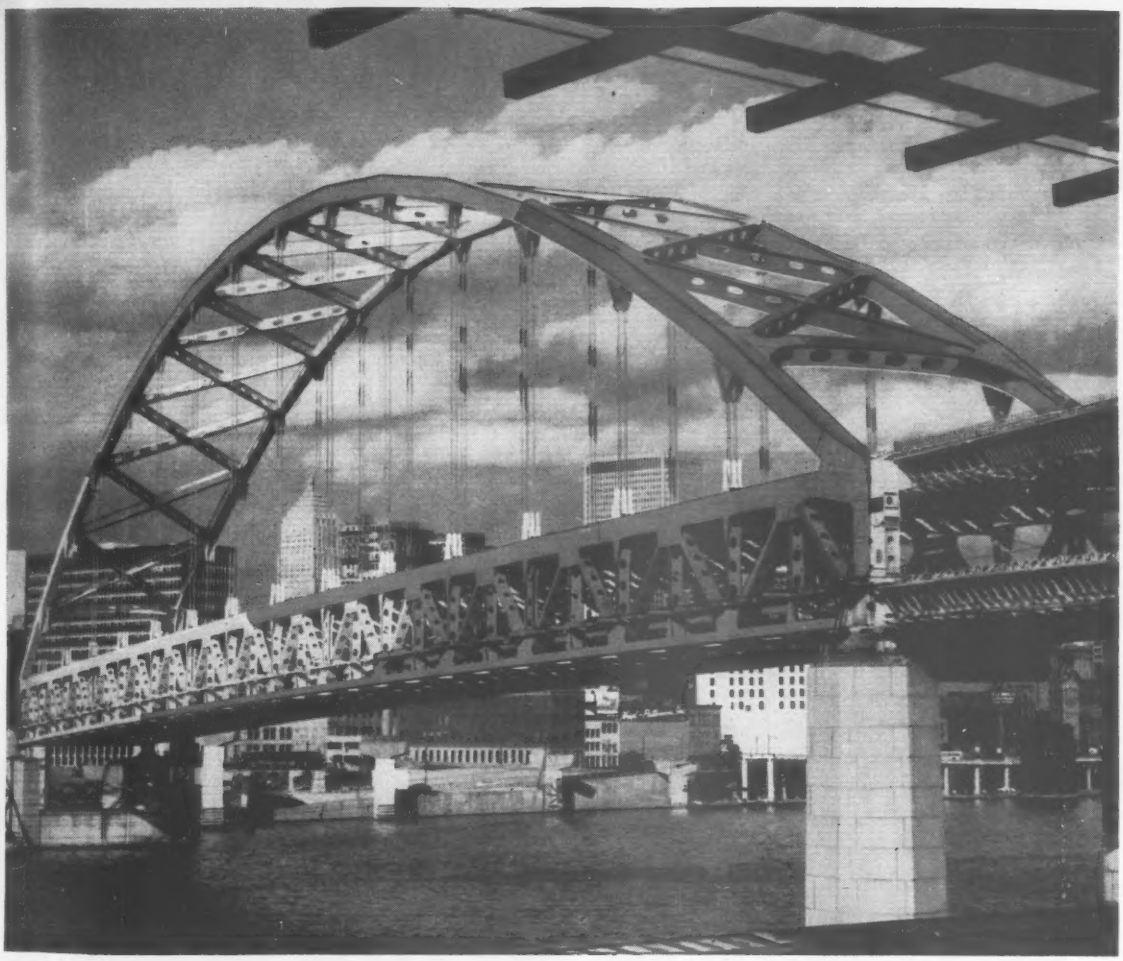

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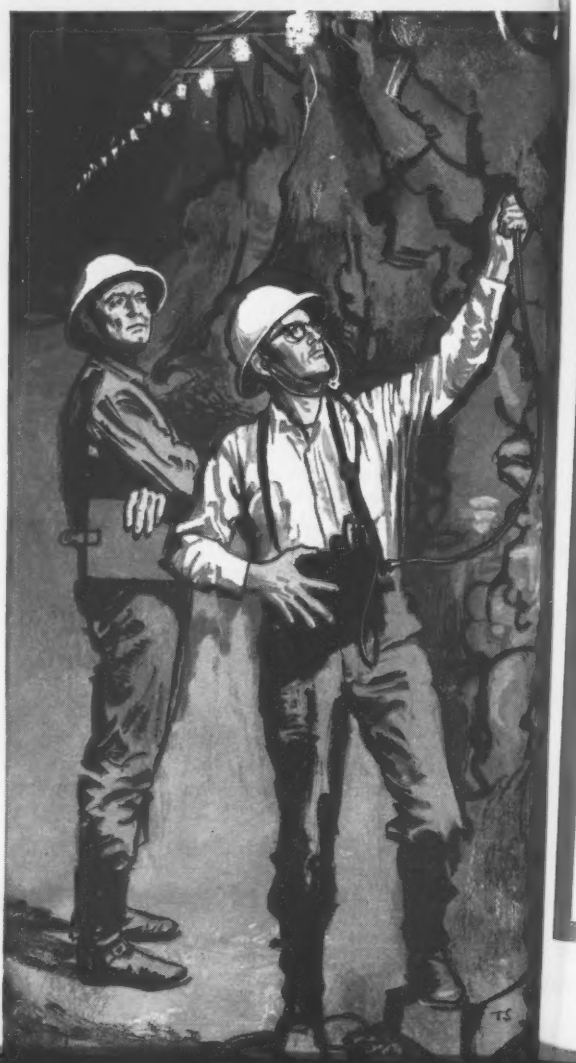

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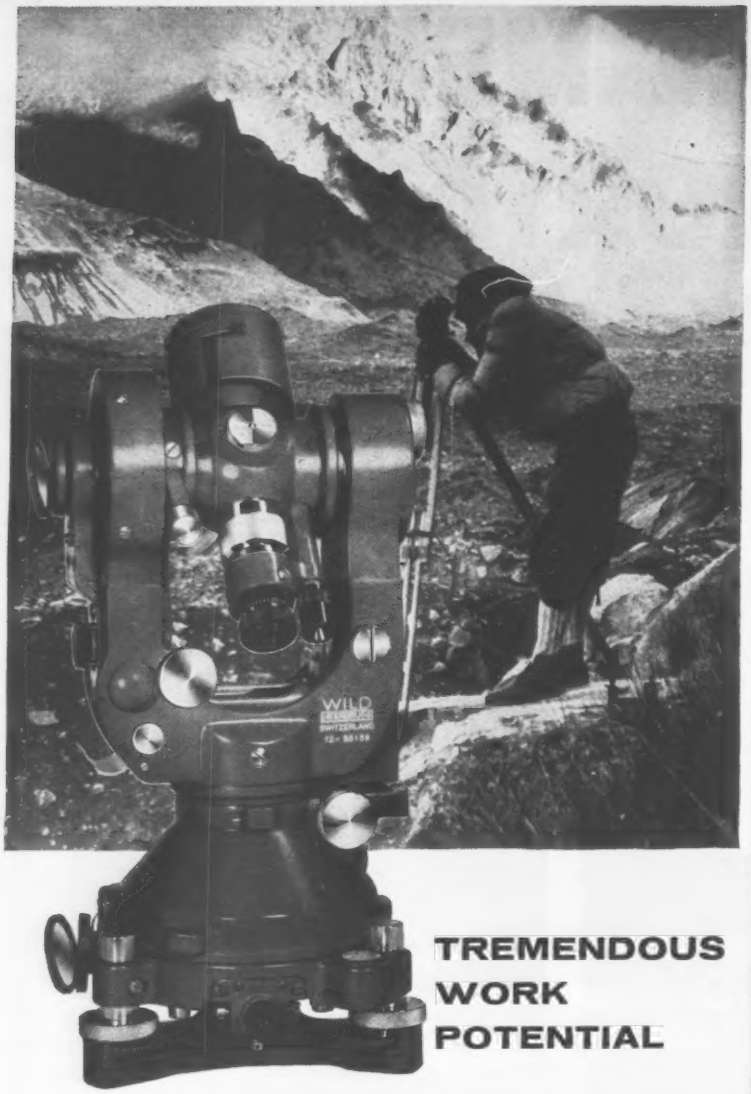

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. . . Reader Comment

Is anyone naive enough to believe the money spent in France (the largest recipient) is worth a cent if war starts? Are you acquainted with the philosophy U. S. "aid" has fostered in Bolivia and some other South American countries?

The biggest favor we can do Communism is to continue this "don't help yourself—wait for U. S. aid" attitude in smaller nations while spending ourselves insolvent.

W. E. GRACE
W. E. Grace Manufacturing Co.

Editor's Note: The point of the editorial was that since there is going to be a foreign aid program, construction people who have a part in it should do everything possible to avoid waste of funds provided. On the word "indispensable," foreign aid is a complex subject and opinions differ. Our opinion differs substantially from those expressed in the two letters above.

Plastic Design?

SIR—Respecting the folded-plate roof that folded at Skokie, Ill., your article (ENR Mar. 5, p. 23) states: "Exact cause of the failure has not yet been determined and probably will not be officially disclosed."

Such reticence is quite understandable, yet it does leave us wholly in the dark as to whether this work was of "plastic" or of "ultimate" design.

HOMER M. HADLEY
Consulting Engineer
Seattle, Wash.

For Your Calendar . . .

American Society for Quality Control, 13th Annual Convention, Cleveland Public Auditorium, Cleveland, Ohio, May 25-27. Write: Wade R. Weaver, Registrar, Republic Steel Corp., Cleveland, Ohio.

Design Engineering Show, Convention Hall, Philadelphia, Pa., May 25-29. Write Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

Wire Reinforcement Institute Annual Spring Meeting, the Greenbrier, White Sulphur Springs, W. Va., May 25-26. Write: Frank B. Brown, Managing Director, WRI, 1049 National Press Building, Washington 4, D. C.

Concrete Reinforcing Steel Institute, Annual Meeting, the Greenbrier, White Sulphur Springs, W. Va., May 25-30. Write H. C. Delzell, Managing Director, CRSI, 38 S. Dearborn St., Room 1625, Chicago 3, Ill.

National District Heating Association, Annual Meeting, Skytop Club, Skytop, Pa., June 1-5. Write: C. E. Squires Co., 18502 Syracuse Ave., Cleveland 10, Ohio.

Industrial Water Conservation Conference, University of Michigan School of Public Health, Ann Arbor, Mich., June 8-10. Write: Wm. Bender, University of Michigan School of Public Health, Ann Arbor, Mich.

Southern Research Institute Conference, Birmingham, Ala., June 11-12. Write: Southern Research Institute, 2000 9th Ave., South, Birmingham 5, Ala.

Symposium on Plastic Design in Steel, Queen's University at Kingston, Ontario, June 15-19. Write: Dr. H. W. Curran, Director of Extension, Queen's University, Kingston, Ontario.

National Society of Professional Engineers, Annual Meeting, Commodore Hotel, New York City, June 17-20. Write: C. L. Ritchie, NSPE, 2029 K St. N. W., Washington, D. C.

Air Pollution Control Association, Annual Meeting, Hotel Statler, Los Angeles, Calif., June 22-26.

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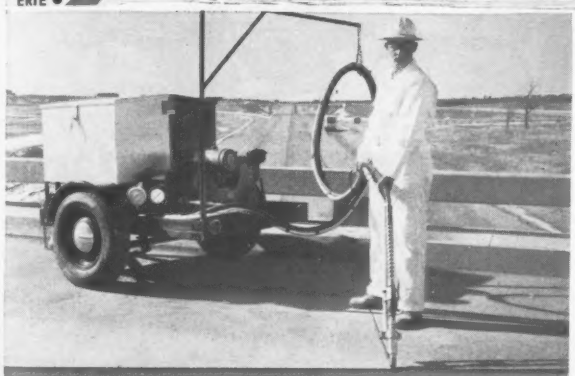

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

WANT A CONTRACT?—California's Oroville-Wyandotte Irrigation District was somewhat nonplussed last week when no bids were received on four of the nine bid schedules for the $58-million project for development of the South Fork of the Feather River. Now the district has to stir up contractor interest before it can go ahead with a planned bond issue.

FLOATING ON AIR—Plans call for a 375-ft metal dome building to be erected by blowing it into the air. Components will be assembled on a plastic bag, which will be inflated as the work proceeds.

NUCLEAR DESALTING?—The Interior Department is designing the second of its saline water conversion plants so it can be adapted to a nuclear heat source, if and when one becomes available.

BUSINESS PACESETTER—Industrial building awards are now 33% above the first 21 weeks of last year, pacing the private construction market. Industrial contracts total $1.1 billion so far this year.

HOW TO LOWER PAYROLL COSTS—Millions of dollars would be saved if the building trades unions would permit contractors to pay workers by check instead of cash, says John D. Lawrence, president of the Building Contractors Association of New Jersey. This change would make better use of superintendents, eliminate unnecessary trips to banks and job sites, and eliminate the risk of payroll thefts, he says.

NEW LOOK IN POST OFFICES—The move to get a fresh look in post office-federal buildings will show up next in New Orleans. No classical, monumental architecture. A 14-story tower will be long and narrow, with a glass facade on the long sides, and limestone on the ends (without windows). The tower will be used for offices. The post office will occupy a two-story, L-shaped base. W. S. Bellows Corp., Houston, won the general contract with a low bid of $12.8 million. Architects are Freret & Wolf, August Perez & Associates, and Favrot, Reed, Mathes & Bergman, of New Orleans.

EMPTY POCKETS HURT—Unless Michigan finds more money fast, building construction there may reach a standstill. The state is so short of money it hasn't been able to pay some of its employees, and there are doubts that enough money is available to meet May invoices from contractors on state jobs.

BOWLED OVER—Nine laminated wood trusses toppled from their position on top of a 50-lane bowling alley project near Albany last Sunday. The bowstring trusses, part of 14 erected two days earlier to support the roof, spanned 140 ft across the building.

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Mr. Weaver of the Weaver Construction Company likes his P&H Diesel powered 1½ yard P&H 655B Excavator. Quarrying rock at Iowa City, Iowa, he has found that this 4 cylinder P&H Engine reduces per ton costs because it has all the needed power—the quick response for fast swings—the simplicity of design to make servicing quick and easy.

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WASHINGTON OBSERVER

- **Democratic legislative program is turning into a shambles**
- **President enjoys those skirmishes**

● **The Democratic legislative program is turning into a shambles.** The sharp economic recovery, coupled with President Eisenhower's firmness in demanding fiscal economy, has put Democratic leaders in a box.

Here are some of the signs:

Area redevelopment. Some top Democratic leaders are quietly giving up hope for this bill, which would aid chronically depressed sections. A few weeks back they were touting it as a "must" for this year. Now they're saying they could settle for it in 1960 instead.

Airport construction. This big spending Democratic pet has been technically in a House-Senate conference committee almost three months. As of this week, the conferees haven't even had a meeting on it. They're in no hurry to send it to the White House, knowing a veto is inevitable unless they cut the spending provisions drastically.

Tax reform—and reduction. Democrats opened this session worrying about unemployment and the economic lag. Now they've begun to change their tune. The House Ways and Means Committee plans major hearings for November, looking to 1960 action on tax cuts—a possibility that stems from the improving economy.

—

● **All of the above illustrates that political skirmishing between President Eisenhower and Congress has begun in earnest.** And the President seems to relish the prospect. Note his extraordinary message to Congress demanding fast action on housing (p. 22) and highway building funds.

Democrats are balking at the federal gasoline tax increases that President Eisenhower says are necessary to put the Interstate construction program back on a pay-as-you-go footing.

Alternative roadbuilding funds are being talked up. Some of the Democratic leaders favor claiming some highway-user taxes that now go into Treasury's general revenues—the automobile excises, for example, or that portion of the truck-bus excises not now earmarked for the Highway Trust Fund.

Continued deficit financing is a strong possibility, too. In fact, at this point, it looks like the best bet. Under this approach, Congress would merely continue in effect for two more fiscal years—1961 and 1962—suspension of the Byrd pay-as-you-build provision, which has already been waived for the past two years.

The Democratic strategy: Withhold action until late in the session in hope that President Eisenhower would accept the decision rather than open up a bitter fight (which certainly would result from a veto) and throw a further blanket of uncertainty over states' planning.

—

● **The economy mood affected the National Rivers and Harbors Congress** in its annual Washington meeting last week. It voted for at least a "minimum" number of new starts this year, instead of the "reasonable" number of past years. Translated, it means the congress hopes for 15 or 20 this year, compared with the 53 that made it happy in 1958.

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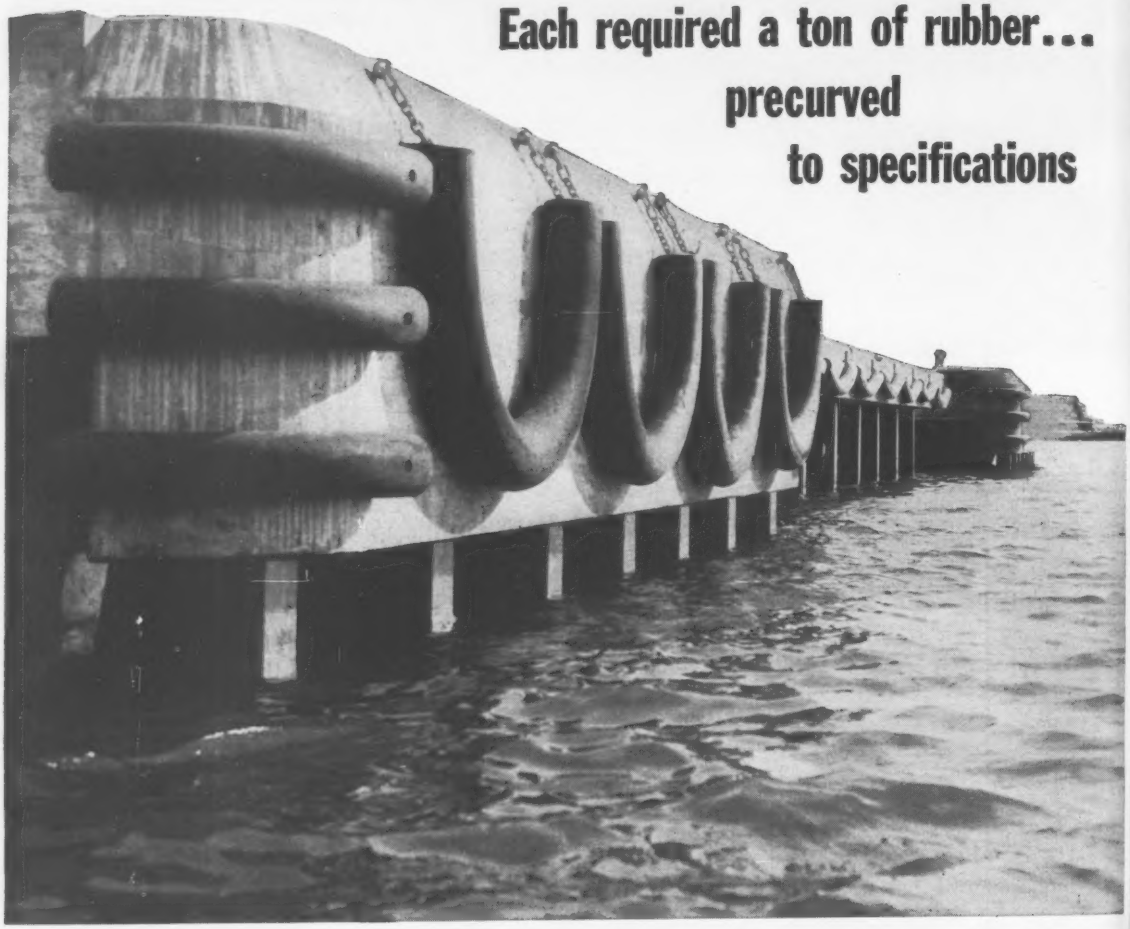

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Wanapum Bid 35% Under Estimate

- **Engineers estimated the Columbia River hydro project at $137.6 million, pointing to the largest contract ever let by competitive bidding.**
- **But the low bid came in $48.7 million under the estimate, another dramatic example of the tough competition for heavy construction jobs.**
- **Even the highest bidder with $30 million under.**

When bidders converged on Ephrata, Wash., last week for the much-delayed bid opening on construction of Wanapum Dam, signs pointed to another high mark for single-contract prices. But instead, the low man came in at $88.9 million, 35% under the engineers' estimate. And even the highest bidder of the five was 22% below the estimate.

The low bids are another indication of the rugged competition for heavy construction jobs. (Also see p. 105.)

Here's how the bidding went:

Grant County Construction Co., joint venture of Morrison-Knudsen, Kaiser, Macco, Raymond International, F&S Construction Co. . . . $88,878,411

Northwest Dam Construction Co., joint venture of Peter Kiewit Sons, Midvalley Utility Constructors, Al Johnson Construction Co., Condon-Cummings Co. and Coker Construction Co. $96,047,439

Merritt-Chapman & Scott Corp. $97,073,300

Joint Venture of Perini Corp., J. A. Jones, Walsh Contracting Co., Manson Construction Co. and Osberg Construction Co. $99,390,111

Joint venture of L .E. Dixon, Arundel Corp., Hunkin-Conkey Co., American Pipe & Construction Co. and Guy F. Atkinson Co. $107,937,222

Engineers had estimated the Columbia River hydro project would cost $137.6 million. This was $12.6 million above the corresponding estimate for a record-setter of three years ago, Priest Rapids Dam, and $2 million above the estimate for one of two years ago, Glen Canyon Dam.

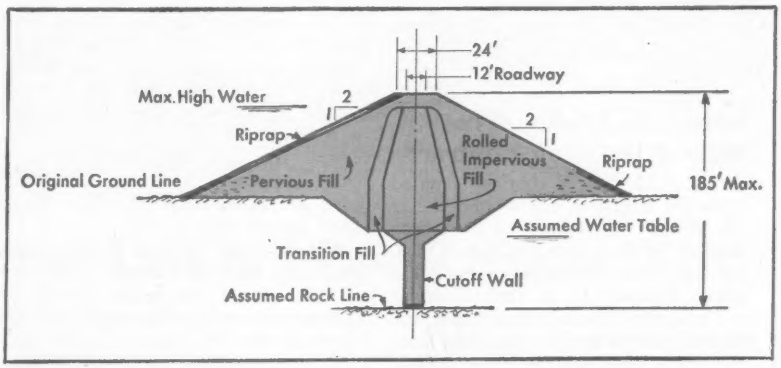
Priest Rapids Dam, Wanapum's sister development, is now under construction 18 miles downstream from the Wanapum site. It was estimated at $125 million. Merritt-Chapman & Scott took the job for $91 million (ENR March 22, 1956, p. 21), to set a new single-contract record.

The following year, Glen Canyon Dam, on the Colorado River in northern Arizona, was estimated by the Bureau of Reclamation at $135 million and went to MC&S for $108 million, setting a new record (ENR Apr. 18, 1957, p. 25).

Wanapum Dam will be a modified Z-shaped structure. Its middle part, parallel to the existing stream, will be the powerhouse and a short concrete gravity section. Earth embankments, one incorporating the concrete spillway section, will extend across the stream from the ends of the powerhouse.

The project's 10 generators will produce 831,000 kw, to be integrated with the Northwest Power Pool.

Dillon, Read & Co. and Kuhn, Loeb & Co. are managing the financing, with



EARTHFILL cross section is typical of 5,400 ft of Wanapum's 8,320-ft length.

PRIEST RAPIDS project includes Wanapum and Priest Rapids developments.

John Nuveen Co., B. J. Van Ingen and Foster & Marshall as co-managers. Bond offers are expected within a month.

A $200-million issue of 50-year revenue bonds had been planned, but there is now a possibility the figure may be reduced because of the low bids.

The construction schedule calls for work to start by September of this year, to be completed in five years.

The utility district faces opposition no matter which way it moves on "Buy American." Some of the power purchasers are reportedly among advocates of domestic equipment purchase.

But representatives of foreign bidders have threatened court action if their bids are disallowed. The low bid incorporates a generator figure of $11.3 million by a Swedish firm, A.S.E.A. Electric Co. General Electric Co. bid $15.6 million.

Major quantities involved in the construction of Wanapum are 11 million cu yd of excavation, 5 million cu yd of embankment, 1 million cu yd of concrete and 33,000 tons of reinforcing steel.

Construction will be accomplished under a fixed unit price and lump-sum type contract. It will include construction of the dam, power plant and appurtenances and the purchase and installation of all major equipment transformers, which will be bid separately later.

American Bridge Wins Biggest Building Contract

A structural steel contract reputed to be the largest in dollar volume ever let for an office building has been awarded by the builders of Grand Central City, New York City, to American Bridge Division, U. S. Steel Corp.

The contract includes furnishing and erecting 40,000 tons of structural steel. Estimated cost is about $15 million.

The 55-story, octagon-shaped skyscraper will rise on a 3½-acre site that adjoins Grand Central Terminal in New York City (ENR Feb. 26, p. 23).

Steel erection will involve a number of complex construction techniques. The building skeleton will sit over 123 railroad tracks on two levels. Therefore, pinpoint scheduling of construction work is required so as not to impede the flow of normal train operations.

Columns will be placed between the tracks and platforms. The foundations will go through both levels of track, steel grillage being placed under the track.

Emery Roth & Sons are the architects for Grand Central City. Diesel Construction Co. is the general contractor. James Ruderman is structural Engineer. Grand Central Building, Inc., is the owner. All are New York City firms.

Housing Bill Released fo

- **Rules Committee unlocks measure for floor vote by House with proviso that changes be allowed**
- **President warns against big public housing spending; veto threat may gain his point**

A three-month legislative blockade on housing legislation broke in Congress last week at the same time official government figures were showing a sharp pickup in homebuilding activity.

The week's events were heartening to most builders. President Carl T. Mitnick of the National Association of Home Builders, in Washington for the spring meeting of NAHB's executive committee, still looks hopefully to a year that will see 1.4 million starts, against 1.1 million in 1958.

Preliminary figures from the Department of Labor put actual housing starts for April at 137,000 units, up from 120,000 in March and up nearly 38,000 over April, 1958.

The seasonally adjusted annual rate, based on April activity, was put at 1.39 million units, unchanged from March despite the sharp pickup in actual starts.

The legislative outlook for housing is brighter, but it is still not entirely clear. It seems likely that within a couple of weeks, however, the Democrats will finally deliver a bill to President Eisenhower.

What clouds the issue is the strong possibility that the President will veto it—especially if Democrats persist in putting new public housing authorizations into it.

This is the situation:

• On Wednesday, in an extraordinary special message to Congress, President Eisenhower demanded hurry-up action on his major housing request for the year—$6 billion of new mortgage insurance authority for the Federal Housing Administration. He made it plain that he doesn't want any bill that contains "big public housing programs and things of that kind."

• On Thursday, the powerful House Rules Committee, which had been blocking action on the bill since early February, relented and cleared the measure for floor action on Tuesday. This change of heart stemmed more from parliamentary threats by Speaker Sam Rayburn, whose patience with the committee was near the breaking point, than from the unusual personal intervention by the President.

The Rules Committee cleared the bill with an "open rule"—meaning that the measure could be subjected to assaults by either amendment or entire substitute measures. A conservative coalition, comprising Southern Democrats and most Republicans, worked long hours on strategy for taking some of the big spending provisions out of the measure and reducing others.

As it cleared the Rules Committee, the bill's major provisions were these:

• **FHA insurance authority**—$6 billion for the remainder of fiscal year 1959, with any portion unused between now and July 1 to lapse. It would authorize $4 billion more for fiscal 1960. (President Eisenhower asked a simple $6-billion addition to the authority for the coming fiscal period.)

• **Urban renewal**—$1.5 billion during the next three years, with the federal contribution for land acquisition and improvement remaining at two-thirds of a project's cost. (President Eisenhower wants only $1.3 billion in the next six years, with the federal contribution declining by gradual steps to 50% in fiscal 1953.)

• **Public housing**—Up to 35,000 units annually for the next four years. (The Administration is dead set against any new authority. This is the prime target of the bill's bitterest foes.)

It seems likely that, despite President Eisenhower's demands and the efforts of the House GOP-Southern Democrat coalition, whatever bill reaches the White House will have some public housing authorization. The Senate, which passed its 1959 housing bill in the early weeks of this session, has voted 35,000 new units in the coming year. It will be unusual if the compromise bill that finally is worked out in the House-Senate conference does not include at least some public housing provision.

The bill also will provide for raising the interest rate on GI mortgages from 4.75% to 5.25%, giving them current parity with FHA mortgages. (But the borrower pays 5.75%, because of the insurance premium charge on FHA mortgages.) This higher rate is in the Senate bill; the House passed such a GI rate rise earlier.

Homebuilders count heavily on the GI rate increase and the fresh addition

for Action

ACTION ASKED—or "there is going to be a bad situation in the housing field."

to FHA authority for giving them one of their biggest years. But not all of the industry leaders assembled in Washington last week were as optimistic as Mr. Mitnick about the prospects. Some thought they could already see some signs—finer screening by lenders, higher interest rates and consumer resistance to rising prices—that might put 1959 starts at or near 1.3 million, rather than 1.4 million.

"That's good, indeed," said one builder. "You see, it's not that things are bad. It's only a matter of degree on the good side."

Should President Eisenhower veto the Democratic bill there is virtually no chance that Congress could override. In that situation, presumably the Democrats would grumble and denounce him politically, then wind up passing the minimum legislation that he wants.

This would mean, of course, further delay in giving FHA its new mortgage insurance authority. How serious this might be is anybody's guess. Even the agency itself doesn't know.

As of this week, FHA has about $1.5 billion remaining in unused authority to make actual insurance commitments. But it also has $3.5 billion outstanding in "agreements to insure." These agreements, in use since Oct. 16, 1958, constitute a stretch-out device to preserve actual insurance authority.

'Plowshare' Studies H-Bomb Uses

Engineering and other commercial applications of nuclear explosive devices were studied last week in San Francisco. More than 500 conferees at the second Plowshare Symposium on Industrial and Scientific Uses of Nuclear Explosions listened to 48 papers exploring the possibilities and problems of the peacetime uses of nuclear explosions.

The Atomic Energy Commission did not restrict dissemination of information from this conference, as it did at the first Plowshare conference two years ago. Subjects covered included findings of the underground nuclear explosion tests—shock patterns, earth motion and thermal effects and avoidance of underground water contamination.

The use of nuclear explosions for excavation of harbors and canals and construction of underground oil storage tanks were also examined.

Construction of a second Panama Canal by use of hydrogen devices was explored by Luke J. Vortman of Sandia Corp. He estimated 651 nuclear devices, each three times as powerful as the Hiroshima bomb, would dig a 59-mile, lockless canal, 600 ft wide by 60 ft deep.

The cost was estimated at $2 billion or $3 billion less than the cost if done by conventional methods.

The real savings in an operation of this kind is in the nature of the explosion. The nuclear blast would remove material at once by depositing it along the crater lip, or even sending it into the atmosphere. This would save the expense of removing loosened material.

Since a device can be made more powerful for little increase in cost, a wide canal (600 ft) is cheaper than a narrower canal, on a per-cu-ft-of-material-removed basis.

Edward Teller, physicist at Lawrence Radiation Laboratory in nearby Berkeley, said the chief mission of Plowshare right now is to create a completely clean explosion.

The radiation problem is one of the two main reasons for the slowness of nuclear energy to permeate the thinking of commercial interests, Mr. Teller said. The other is the "sort of biggish effects" of a nuclear explosion "which tends to make one think twice about setting one off."

Mr. Teller pointed out, however, that in an underground explosion the radiation, heat and blast effects are completely contained. Such explosions are actually less dangerous than the dispersal of radioactive materials from a conventional reactor, he asserted.

He thinks the most promising area for economic gain is in the production of underground products to be mined "later" such as heat, isotopes and special chemical compounds. Mr. Teller believes this aspect of the Plowshare program will pay out more, eventually, than the earthmoving or rock-breaking phases of the program.

San Luis Bill Passes Senate

The $290-million San Luis unit of the federal Central Valley Project (irrigation and power) in California moved much closer to reality in Congress last week. The Senate approved its version of a San Luis bill, and the House Interior Committee recommended its version to the House floor.

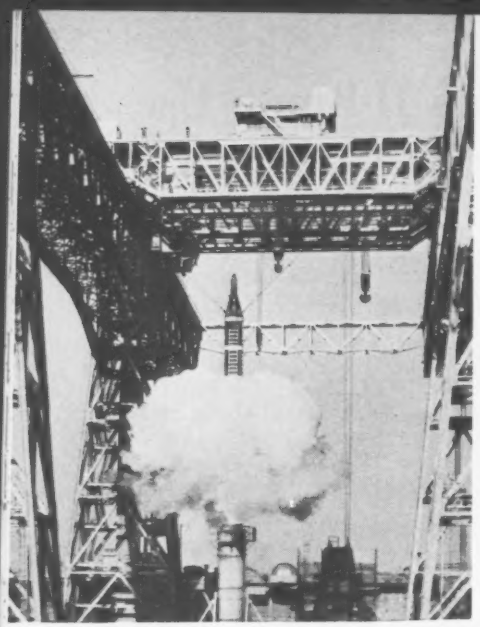
The Senate amended its bill, after heated debate, to permit the 160-acre federal limitation to apply to about 500,000 acres of California lands that would be irrigated jointly by San Luis and the state-owned Feather River Project. California Senators Clair Engle (D.) and Thomas Kuchel (R.) both fought against the amendment, charging that a federal acreage limitation should not be applied to any lands where state irrigation projects are involved.

The House bill prohibits the federal acreage limitation, however, from applying to lands jointly irrigated by state and federal projects. The federal law could be applied only to lands that were entirely irrigated by the San Luis unit.

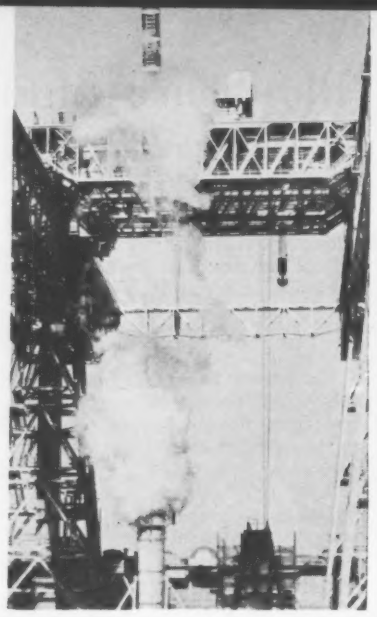
The House bill also prohibits San Luis from building or operating its own power transmission lines for pumping stations—local public utility lines would be used instead. And it requires agreement between Congress and California before federal funds may be appropriated for the San Luis unit.

San Luis will cost an estimated $290,430,000 outright, plus an additional amount (estimated at up to $192,650,000) for distribution canals, which are not built with local funds.

Basic structures include the San Luis Dam and 1-million-acre reservoir and the San Luis and Pleasant Valley canals. Water impounded in the reservoir would be pumped via the existing Delta-Mendota Canal from surplus flows in the delta area of the San Joaquin and Sacramento Rivers. No power is provided at the San Luis Dam, and the unit would require about 756-million kilowatt hours annually of power for pumping stations.



Fire



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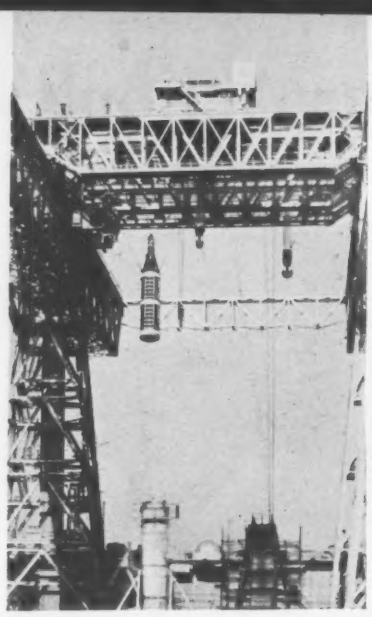


Return

How to Play Catch With a Rocket

The Navy has developed an apparatus like a giant yo-yo that enables it to fire an 18-ton dummy of an intermediate range ballistic missile into the air and then pull it back to earth.

Scientists working on the development of the submarine-launched Polaris IRBM wanted to get precise information on the effect of sudden acceleration forces on the missile structure.

Mock-up missiles launched to fall into the ocean were retrievable, but the delicate measuring instruments were destroyed by the impact.

The only solution was to catch the missiles in mid-air. Impossible as it sounds, that's what they're doing now at the San Francisco Naval Shipyard.

The launching apparatus for the rocket is installed at ground level between two overhead cranes. These cranes, which are 200 ft above the launcher, are fitted with arresting gear engines, the devices used on aircraft carriers to shorten the runs of landing planes.

Cables hanging from the cranes are attached to the 28-ft test missile before it is fired. After the rocket blast has hurled the dummy Polaris skyward, when it has reached the peak of its trajectory, the cables are reeled in to put on tension and stop the flight. The rocket is then lowered gently back to earth.

The two cranes are supported by a huge crane runway built by American Bridge Division of U. S. Steel after World War II (ENR Dec. 25, 1947, p. 66). At the time of its completion it was the world's largest crane, with a capacity of 450 tons.

Senate Group Halts Nike Base Building

A freeze on Army construction of new Nike-Hercules missile bases was ordered last week by the Senate Armed Services Committee.

The committee tied up $50 million appropriated last year (but still to be contracted out by the Army) for construction of 25 sites in the continental U. S. and facilities for eight missile batteries in Hawaii.

The action was linked to the committee's approval of a $1,227,882,000 military construction authorization bill for fiscal 1960. This is nearly $25 million under the $1,252,608,000 allowed by the House of Representatives and about $130 million less than asked by the Administration.

In reporting out the bill for next year's projects, the committee recommended that Congress "repeal authority" for Nike construction planned for the current year but yet to be placed under contract.

The measure reflects widespread Congressional dissatisfaction with Pentagon policy on construction of air defense facilities. The lawmakers have been pushing the Defense Department to decide on one of two competing anti-aircraft missiles—the Army's Nike-Hercules or the Air Force's longer-range Bomarc.

But the Pentagon has continued planning for both missiles—the Hercules for close-in or "point" defense of major target cities and the Bomarc for so-called "area" or far-out defense.

The committee called the Nike system "virtually obsolete," and implied that the rival Bomarc should now be pushed faster. The committee asked Defense Secretary Neil H. McElroy to come up with a "master plan" on anti-aircraft missile base construction before Congress adjourns this year.

But by last week plans for 19 Nike construction projects had been finally cleared. Invitations to bid on some of them had already been advertised. The latest freeze order, of course, knocks out these projects.

The committee also turned down a $17-million request for additional Nike-Hercules base construction.

Further construction of Air Force Bomarc installations, however, was approved. The committee voted authority for $26 million to build five new sites and $900,000 for support facilities at a site approved last year. The Bomarc has a range of 200 miles.

The current Bomarc program includes construction of 19 bases (ENR Apr. 30, p. 24). Over 200 Nike bases have been built.

Cities Follow Roads

Planners stress freeways in urban development

Future urban development will follow the modern freeway.

This was forecast and emphasized at the 25th annual convention of the American Society of Planning Officials held in Minneapolis and attended by 1,160 engineers and administrators last week.

In most large metropolitan areas the new growth is in the fringe and suburban areas where people are almost totally dependent upon the auto for transportation, Marvin R. Springer, urban planning consultant of Dallas, pointed out.

The freeway will become the skeletal framework upon which most future urban areas will be built, with elapsed travel time being more important than distance, Mr. Springer said.

But "unless the right-of-way for freeways is designed into the urban development in the sprawling fringes of our metropolitan areas, I see little hope for solution of the mounting transportation problem," Mr. Springer warned.

The government should be persuaded to underwrite the construction of just one modern efficient mass transit line so the user could compare its advantages and costs with auto transportation.

This suggestion was made by Matjin Meyerson, director of the joint Harvard University-MIT Center for Urban Studies.

He also said that planners should "capitalize on the American consumers' search for the specialized, the quality and the off-beat." Some such items could be:

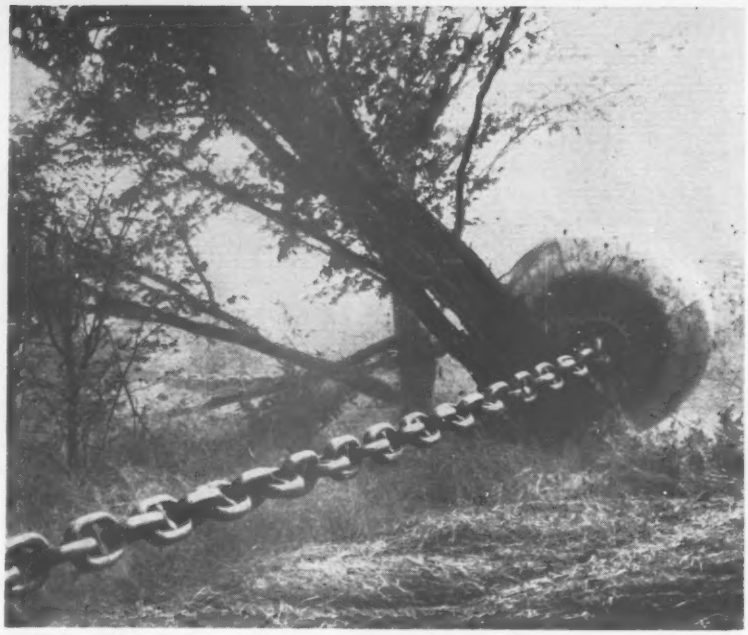
The Swedish-type apartment building where a working mother can find cooking, laundry, recreation and nursery services right in the building.

In-town light industry development where a number of small businesses could have in a single building secretarial and other necessary business services.

Radioactivity was another problem under discussion during the five-day meeting.

Planners for governmental units have been remiss in not insisting on standards for locating atomic installations and disposal of radioactive wastes, said Hollister Kent, of Sargent, Webster, Crenshaw and Folley, architectural firm of Syracuse, N. Y.

He and other members of a panel on radioactivity asked the ASPO directors to study a number of phases of atomic energy, including the effects of a nuclear installation on the surrounding terrain, water and air, and on the health of animals and plants.

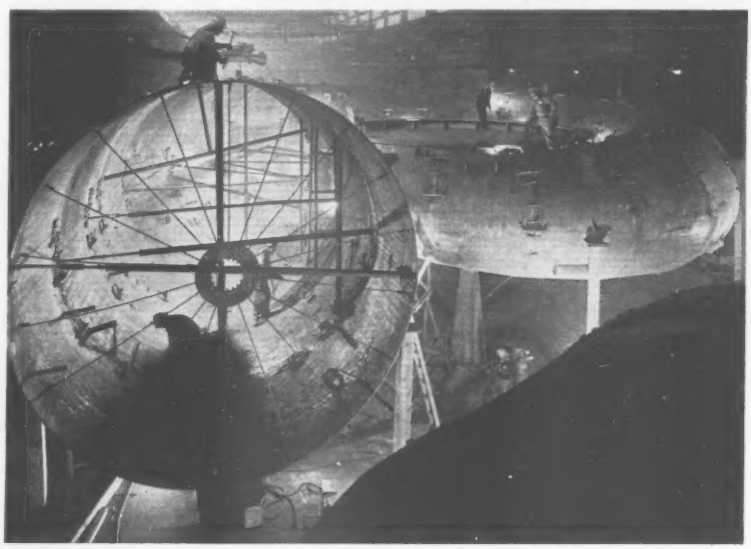


It's a Ball for Land-Clearers

Trees topple like matchsticks as 8-ft-dia steel balls strung on battleship anchor chains clear 100,000 acres behind Kariba Dam in Rhodesia. Three balls linked by chain and towed by tractors are knocking down everything in their path.

The cleared area will be the fishing grounds and harbors of the giant lake forming behind the dam.

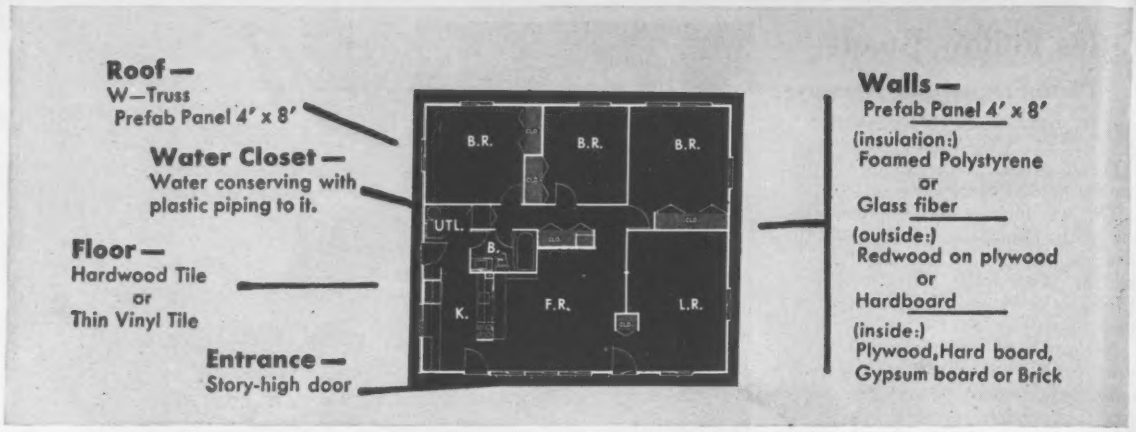
The ball-and-chain method of land clearing for reservoir sites was used extensively at Hungry Horse Dam in Montana about eight years ago.



Scroll Case to Be 'Two-Way'

The scroll case being assembled here is one of 12 that will be installed in the Tuscarora pumped-storage powerhouse of the Niagara Power Project.

The 18-ft-dia inlet of the scroll case becomes the outlet when the turbine is reversed to pump water into the storage reservoir behind the powerhouse. Allis-Chalmers Mfg. Co., Milwaukee, is fabricating the scrolls.



Tried out in NAHB's research houses . . .

New Products Go on Display

New techniques and products for building better houses at less cost were unveiled in the National Housing Center, Washington, D. C., last week. The National Association of Home Builders lifted the curtain on an exhibit of advanced methods recently employed in the construction of two research houses —one at South Bend, Ind., and the other at Knoxville, Tenn. (ENR Aug. 7, 1958, p. 26).

Both houses were sponsored by the NAHB Research Institute, which launched a research home program in 1955 and completed its first house in Kensington, Md., in 1957. A fourth research home will be built this year in East Lansing, Mich.

Development and testing of new methods and materials to beat the cost of housing is the prime purpose of all the research homes.

Each is erected by a member builder for sale at a competitive market price. The only requirement placed on the buyer is that he cooperate in helping the researchers keep a continuing record of performance data.

Like the first research home, the two current houses are slab-on-grade structures built on a modular system. But the newer houses go much further than their predecessor in using shop-fabricated components to save time and labor on the job.

Structural components on both jobs particularly helped to speed wall erection and house closure. Exterior walls at both sites were set up in a single operation using prefabricated structural panels of modular size, faced both sides with wall finish materials.

At South Bend, not only the exterior walls but also the roof and interior partitions consisted of factory-made structural panels containing a foamed polystyrene core bonded to the covering materials. The foamed plastic functioned as a thermal insulator and vapor barrier and served a structural purpose.

The manufactured panels had a variety of surface finishes. For the exterior, the facing was redwood on plywood backing. On the interior, the finishes included plywood, Philippine mahogany, hardboard, gypsum board and brick veneer. Thickness of the panels ranged from 4 in. for the long roof units to 3 in. for exterior walls and 2 in. for the interior walls.

At Knoxville, the wall panels included framing of 2x4's and 1x4's between special hardboard cover materials. Glass-fiber insulation, with integral vapor barrier, was stapled into the core while the panel was being fabricated.

For floor-planning flexibility, the Knoxville house employed roof trusses of 24-ft clear span. Low-cost W-trusses with galvanized metal connectors were prefabricated. With the connectors used, nailing was required only from the side. The nails were self-clinching.

Two plumbing innovations installed in the Knoxville house are featured in the Washington exhibit. One was use of plastic piping for all purposes, including hot-water supply lines as well as cold water and waste. Material in the hot-water lines was a new high temperature thermoplastic, polypropylene.

Sewage disposal from the Knoxville house utilizes the aerobic treatment process and sewage grinders to conserve water and reduce the size of waste and vent pipes. A garbage grinder installed in connection with each water closet cuts the water consumption to one gallon instead of six when the tank is flushed.

Another feature employed in both houses is ceiling-height interior doors. This innovation saves $12 to $15 per door—$100 to $150 per house.

Also on display are these additional features:

- Floor-to-ceiling fixed glass windows in combination with jalousie sash of equal height. The jalousie louvers have redwood slats to provide natural ventilation and privacy.
- Hardwood floors laid like tile highlight the living rooms of both houses. This new 3/16x9x9-in. tile is made of solid hardwood processed to give the material dimensional stability. It is highly resistant to shrinkage, and expansion caused by moisture changes. In place, the price of the hardwood floor is about the same as low-cost resilient flooring.
- Outside the living room, nearly all the finish flooring in each house is a new all-vinyl tile, somewhat thinner than normal vinyl tile, but highly durable and resistant to grease, acids and mildew.

Engineering Teachers Are Earning More Money

The average professional income of engineering teachers in the U. S. has risen 8.3% since 1956. Their basic teaching salaries have increased by 13.5%, but their outside income dropped by 7%, according to a survey made by the Engineers Joint Council.

Average professional income is now about $9,600 for engineering teachers. In 1956 it was $8,862. The income of those in public institutions rose more than that of engineering teachers in privately supported schools.

The basic salaries range from a low of $6,744 in the South to $8,392 in the Pacific region.

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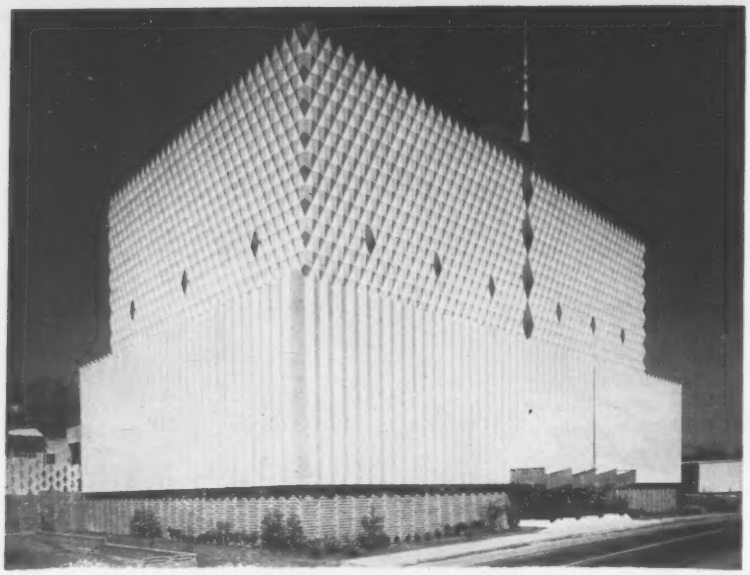


Here's Abundant Life Building

Faith-healing evangelist Oral Roberts has dedicated his $3-million Abundant Life Building in Tulsa.

The seven-story structure is framed with 1,123 tons of steel connected by high-strength bolts. It's sheathed in granite, with diamond-shaped panels of white marble on the upper stories.

There's not a window in the place. It measures 100x170 ft at the base and the tower is 90x150 ft. Two sets of air-conditioning units and two sets of boilers insure cooling and heating at all times throughout the building's 114,475 sq ft.

A stereophonic public-address system and sound-proofed walls were designed to allow hearing without echoes in all parts of the seventh floor auditorium. The structure was designed for five additional floors.

E. P. Roberts, the evangelist's brother, was general contractor. Cecil Stanfield is the architect.

Senate Gets Columbia Basin Bill

Sen. Richard Neuberger (D., Ore.) has introduced a "Bonneville power corporation" bill calling for up to $1.1 billion in revenue bonds to build new power plants in the Columbia River Basin.

The measure is successor to the "Columbia River Development Corporation" bill introduced last year by Senator Neuberger and seven other Senators.

The new bill calls for replacement of the Bonneville Power Administration (under the Interior Department) with an independent federal corporation that would be responsible for supplying power needs in Washington, Oregon, Idaho and western Montana. Because of its highly controversial nature, the bill probably won't get much past the committee stage this year.

The proposed corporation would be authorized to build and operate steam and nuclear power plants in the Pacific Northwest without additional approval from Congress. And the corporation could enter into agreements with the Army Engineers and Bureau of Reclamation to finance and operate the power facilities of authorized federal multi-purpose hydro projects. This would "assure a continual supply of new power for the federal system (in the Columbia Basin) . . . rather than the fits and starts growth of the past 10 or 15 years," Senator Neuberger emphasized.

The new bill would not give the corporation "veto" power over private or nonfederal hydropower license applications for the Pacific Northwest pending before the Federal Power Commission. The measure would soften the present Bonneville public preference clause to "prevent unreasonable geographic concentration of power" in states where public power systems predominate. This modification cost Senator Neuberger the support of the seven Senators who co-sponsored the bill last year.

A five-man TVA-like board of directors would control the proposed corporation.

New Atom Smashers

Accelerators will boost construction spending

President Eisenhower's decision to throw more federal resources behind basic research may open the way for hundreds of millions of dollars in new construction in the next few years. The first installment will be $100 million for a two-mile-long atom smasher at Stanford, Calif.

The President told 500 scientists last week in New York that the U.S. must spend more money on basic research if it is to maintain world leadership.

Specifically, he disclosed that he is asking Congress to authorize construction of a $100-million linear electron accelerator at Stanford University, Palo Alto, Calif. Supporting facilities are expected to take another $50 million in construction money.

The facility, which will take six years to build, will be two miles long. It is expected to be tunneled into a hillside to avoid hazard resulting from stray radiation.

The President's announcement was in line with a special joint report he had received from his scientific advisory committee and the Atomic Energy Commission's General Advisory Committee.

If the whole report is taken as seriously by Administration policy makers, then the Stanford accelerator may be only the first of a series of big new construction projects for basic research.

The advisory groups call for development of a cohesive national policy on research under which technical goals will be set and money and facilities made available to meet them.

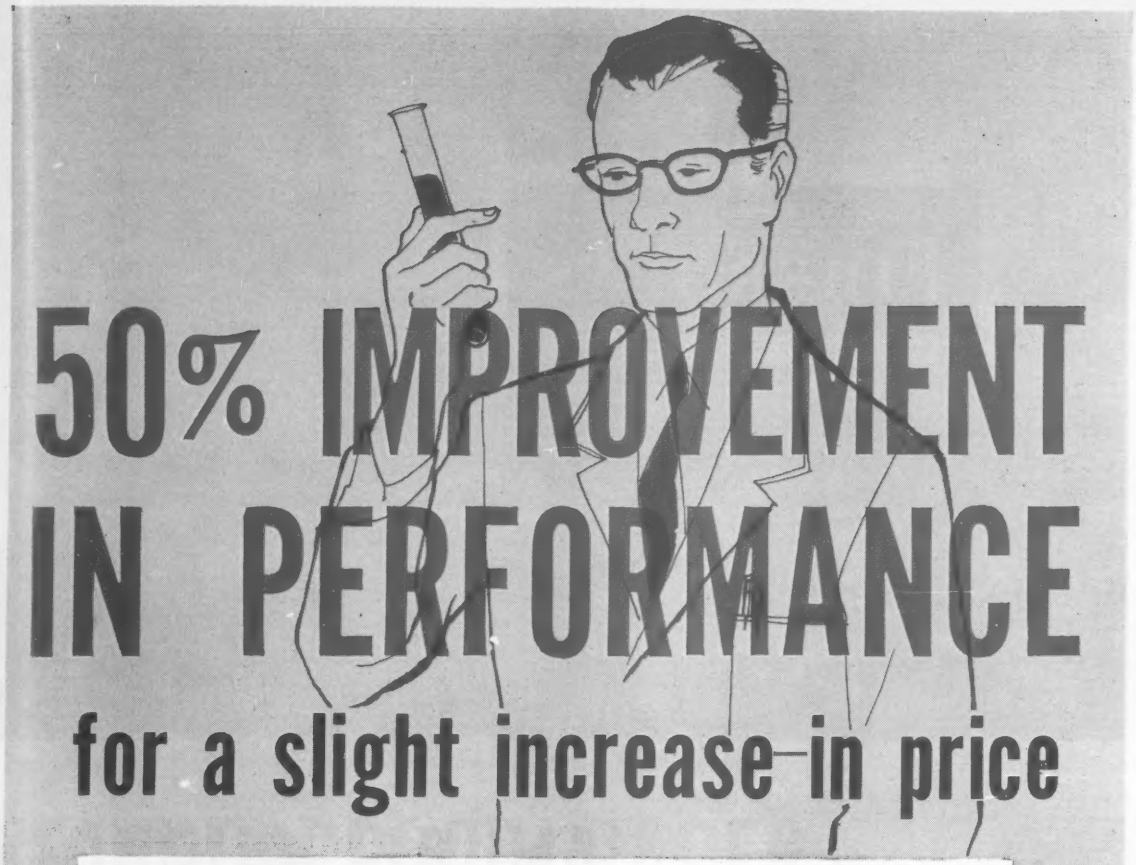
Lake Tahoe Will Get $150-Million Development

Construction begins this month on a project to transform a marsh on the south shore of Lake Tahoe, California, into a $150-million residential and resort area.

The area, Tahoe Keys, will be dredged to provide waterways and fill for construction sites. Development will include 17 miles of lakefront area, 2,500 residential lakefront lots, a 70-acre hotel and convention center, a 30-acre shopping center, a marina to accommodate 3,000 boats and a beach-recreation area.

The project, reported to be the largest project of its type west of the Mississippi River is scheduled for completion in 1964. It was two years in planning.

The development is a joint venture of J. H. Pomeroy & Co., San Francisco, Hawaiian Dredging & Construction Co., Honolulu, Lincoln Development Co. and J. A. Warford of Lake Tahoe.



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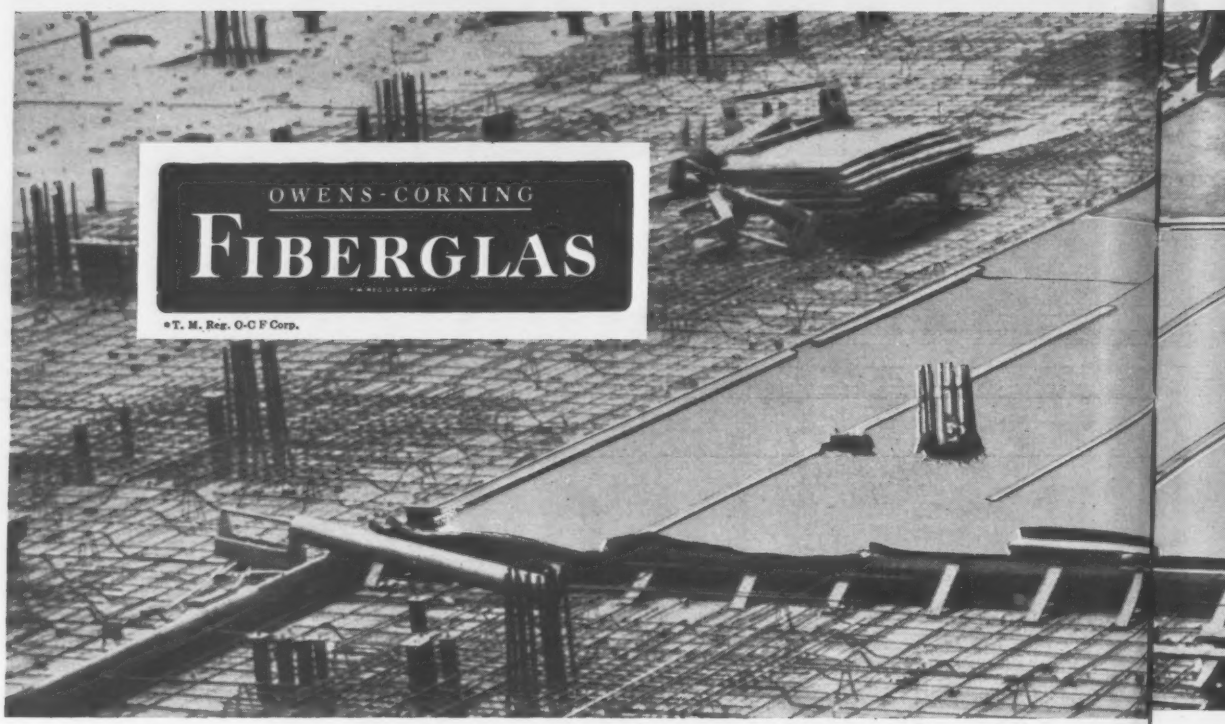

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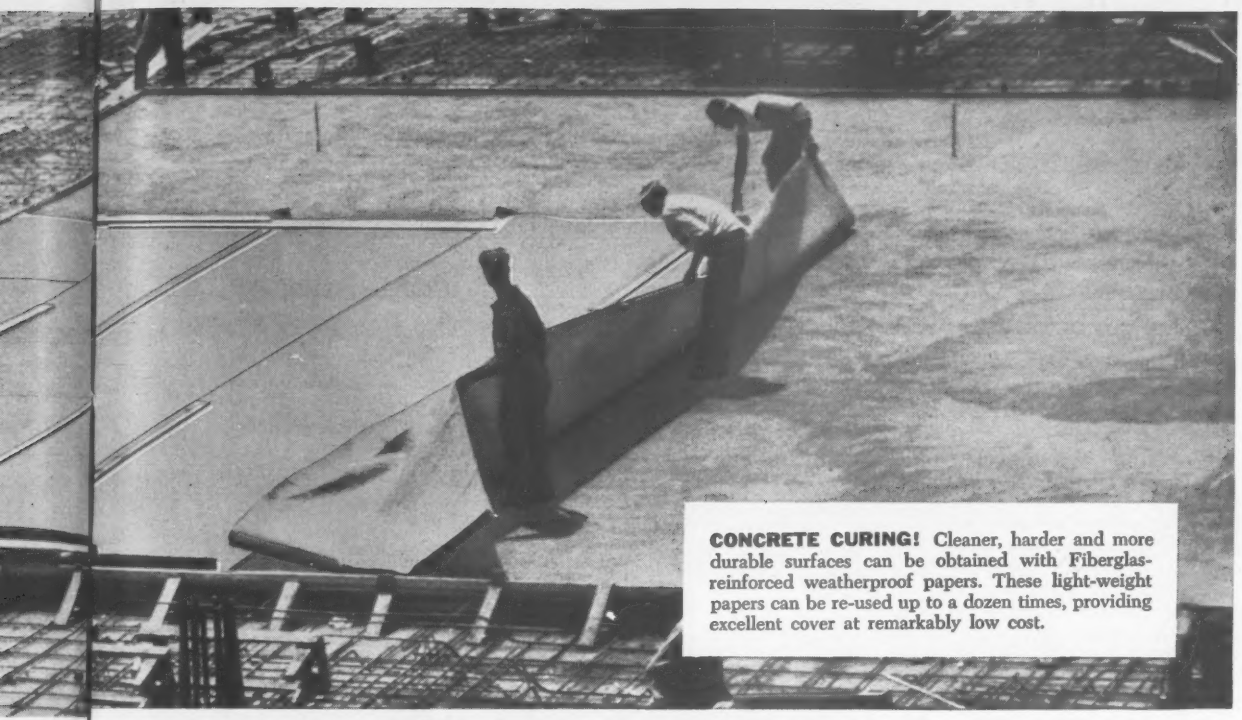

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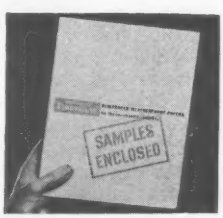


Clearing the Air

New York highway builders meet with public works men

Highway contractors and public works officials in New York State are winding up discussions of mutual problems at a series of dinners in the state's 10 districts.

The last of the district meetings between members of the New York State Chapter of Associated General Contractors and representatives of the state's Department of Public Works was held this week. The AGC chapter will hold a two-day meeting with DPW men in August to sum up the 10 district meetings.

The meetings have been endorsed by DPW Superintendent J. Burch McMorran as "a good way for us to understand each other's problems."

The problems discussed at the New York City dinner are typical of all the dinners. Some of them are:

• **Mixer-placed concrete**—The contractors maintained that mixer-placed concrete, banned by the state in favor of crane and bucket placement, produces good highways.

• **Labor affidavit law**—DPW and the contractors are working for abolition of a law that makes it impossible for a contractor to be paid until he submits affidavits from his subcontractors that all workers have been paid.

• **DPW drawings**—The department's small-scale plans are difficult to read, say the contractors, and probably don't save the state any money.

• **Right-of-way**—The highway builders say their schedules would be easier to maintain if the state waited until all right-of-way was acquired before it advertised a job.

• **Supplemental agreements** — Payment for approved sections of supplemental agreements instead of delaying payment for the entire agreement until disputed sections are settled is suggested by the builders.

• **Bid preparation time**—The contractors say that the present interval between the advertisement and letting of bids doesn't allow them enough time for proper preparation of their bids.

• **Title clearance**—DPW announces that an assistant attorney general will be assigned to each district to speed up land acquisition and title clearance.

About 50 persons attended the New York City dinner. DPW representatives included Superintendent McMorran; Bernard A. Lefeve, deputy chief engineer for highways, and Bernard Goul, district engineer.

Lee G. Blackhall, managing director of AGC's New York State Charter, instituted the dinner meetings.

Around the World . . .

• **Seaway ships jam Detroit**—Detroit has revived long-dormant plans for a $5.5-million public terminal for ocean ships after early-season St. Lawrence Seaway vessels found no place to dock. Existing berths can accommodate only four or five ships. Voters twice turned down proposals for a bond issue that would finance the terminal.

• **TVA association?**—There ought to be a Tennessee Valley Association, says Brig. Gen. Herbert D. Vogel, TVA chairman. He cites the valuable promotional work carried on by associations in the Ohio, Missouri and Mississippi valleys.

• **Happy birthday**—The American Institute of Electrical Engineers marked its 75th anniversary at a luncheon in New York City last week. AIEE started in 1884 with 71 charter members; now its membership exceeds 52,000. Among the founders were such famous men as Thomas Edison, Alexander Graham Bell, Prof. Elihu Thomson and Norvin Green.

• **Underground facilities**—The third international congress concerned with the design and construction of underground facilities in cities will be held in Brussels, Belgium, September 21-25. The first congress was held in Paris in 1937 and the second in Rotterdam in 1948.

• **Hyde Park hotel**—Hilton Hotels, International, and British financier Charles Clore, have submitted a second skyscraper-hotel design for the Hyde Park area of London to the Minister of Housing—this one for 311-ft height. Plans for a 390-ft-high hotel were turned down last year.

• **Where railroads still rate**—The Canadian Pacific Railway Co. will have to spend about $900 million over the next 10 years for replacements and improvement of rail properties. The railroad has spent $780 million on improvements over the past 10 years.

• **Short of engineers**—An in-service training program to offset Tennessee's inability to attract sufficient graduate civil engineers is proposed by Highway Commissioner D. W. Moulton. Only 22% of the highway department's engineers are graduates of engineering schools or hold engineering degrees.

• **California geyser power**—Pacific Gas & Electric Co. plans to start construction this summer on a $2-million geyser-powered electric generating station in Sonoma County, Calif. By mid-1960 the plant is expected to be producing 12,500 kw, with added production a possibility later.

• **Kaiser may build reactor**—Kaiser Engineers, Oakland, Calif., is in line for the principal construction contract on a new plutonium-producing reactor at the Atomic Energy Commission's Hanford, Wash., plant. Kaiser beat out 13 other firms submitting proposals. The contract will be cost-plus type. The reactor will cost $145 million with $100 million going into construction.

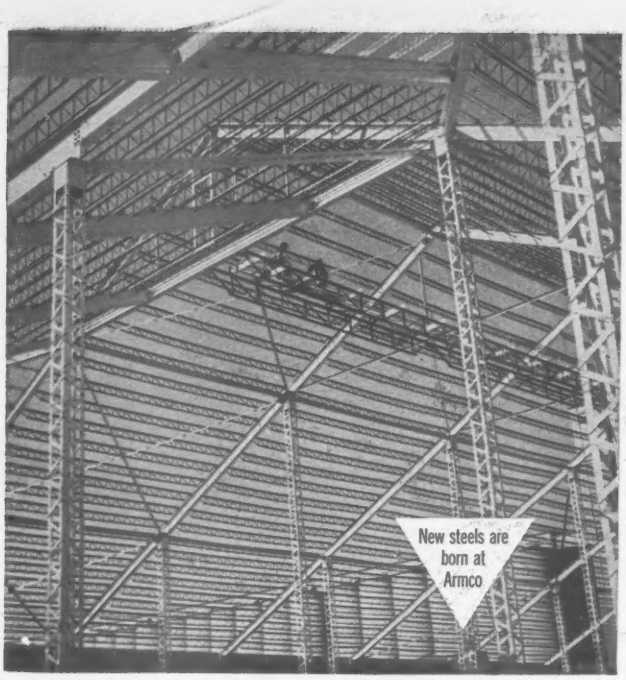
• **Canadian steel**—Construction is starting on a $20-million steel complex at Kimberley, B. C., for Consolidated Mining & Smelting of Canada, Ltd. Ultimate annual capacity of the plant will be 100,000 tons of steel plus 36,500 tons of pig iron.

• **Winnipeg seaway**—A Canadian engineer, C. E. Hollborn, proposes to open the city of Winnipeg—in the heart of Canada—to ocean shipping by constructing a seaway through Lake Winnipeg, along the Nelson River and into Hudson Bay. The waterway would be 650 miles long and permit passage of 6,000-ton ocean-going vessels and 10,000-ton lake steamers.

• **Tall parking story**—A 17-story automatic parking garage will be built in downtown San Diego. Mr. M. B. Fisher, the owner, says it's the highest of its type ever built. The $1.4-million garage will have an ultimate capacity of 762 cars. Stiles & Robert Clements of Los Angeles are the architects.

• **Big spender**—Delaware Power & Light Co., Wilmington, plans to spend more than $93 million for new construction over a five-year period. Included in the program is a 150,000-kw generating unit at Edgemoor, Del.

• **British Columbia port**—Canada is planning to expand the fresh water port of New Westminster, British Columbia. The Frazer River will be dredged to permit ocean vessels to move 25 miles upriver.



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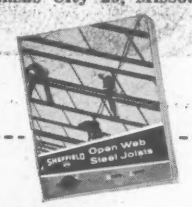

SHEFFIELD DIVISION

ARMCO STEEL CORPORATION

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Reinforcing for arches was bent

Half-arch was set with one end

New Record: Precast Arches Span 160

Eleven precast, reinforced concrete arches, spanning 160 ft, support the roof of Fairfield University's new gymnasium in Fairfield, Conn. It's a record span for arch ribs precast in the U. S.

The parabolic arch ribs, carefully cast at the site in matched pairs, form a three-hinged arch structure sheathed with 4-in.-thick wood roof decking.

Total cost of the project is only $760,000, including all site work, heating and ventilating. That's $18.50 per sq ft (the building covers 41,000 sq ft).

Design loads for the gymnasium roof meet American Standard Association recommendations, exceeding local code requirements. Based on a horizontal projection of the arch curve, the live load varies from 31 psf at the steepest section to 40 psf along the crown.

Total design dead load for both the arch and roof deck amounts to 848 lb per lin ft of arch. The most severe condition used in designing the structure was full dead load on a complete arch plus full live load on half an arch.

The arches, 18 x 30 in. in section, are parabolic, with the resultant of the loads passing through the neutral axis of each arch. Each of the eleven arch ribs consists of two 94-ft-long segments.

For easy fabrication, the reinforcing for each rib (14 No. 11 bars) was made up of straight bars with lapped, welded joints. Reinforcing was bent and assembled right on the casting bed—in jigs, which were removed when welding was completed.

The casting bed was a single concrete slab cast at one end of the building site. From the air, it looks like a flat crescent of paving, close to the rear of the gymnasium.

On the casting bed, layout was simplified by casting all eleven arches in three stacks of 4, 4 and 3, one on top another. This way, the builder laid out just one arch and made up the other two stacks by offset from the first one. Hinge plates for arches in each stack were merely set on top and in line with the ones below. Carpenters made the forms for the arches with ¾ in., plastic-faced plywood.

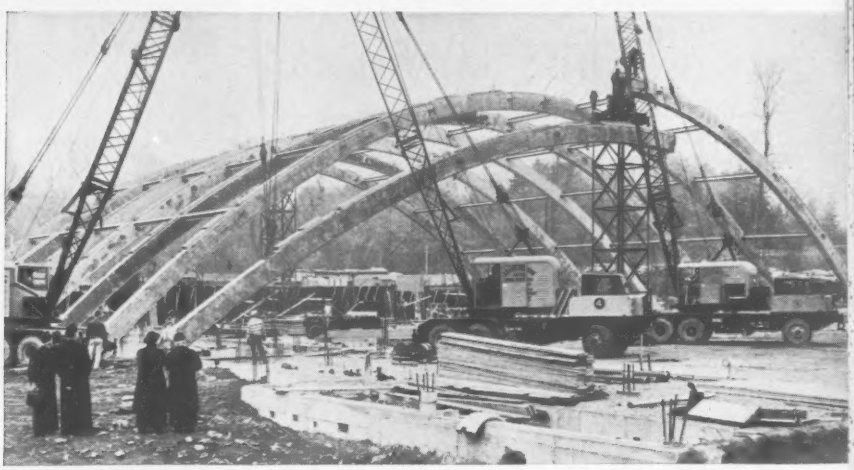
Concrete for the arches had to reach 5,000 psi strength at 28 days; slump was limited to only 2½ in.

The general contractor cast each pair of arch halves at the same time. For correct alignment in the finished struc-

and welded in jigs on casting bed.

Two cranes transported the precast ribs from the casting bed.

on abutment, other on tower.



Crown connection made, the ribs were lowered into final position.

160 Feet

ture, the crown-hinge plates of each arch (which were to be bolted together after erection) were tack-welded together, with proper gap between them for a rocker. (Two days after casting, shrinkage had broken all tack welds at these hinges.)

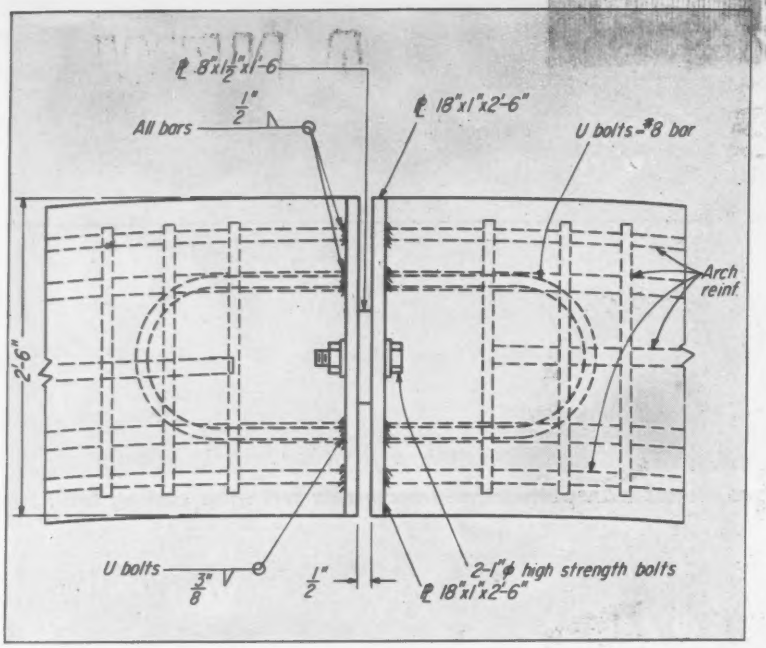
Casting cycle was just 2½ days. Crews swabbed on a bond-breaking agent between each arch and under all three stacks.

Placing the arches was a ticklish job done over a seven-working-day period. Here's how they did it.

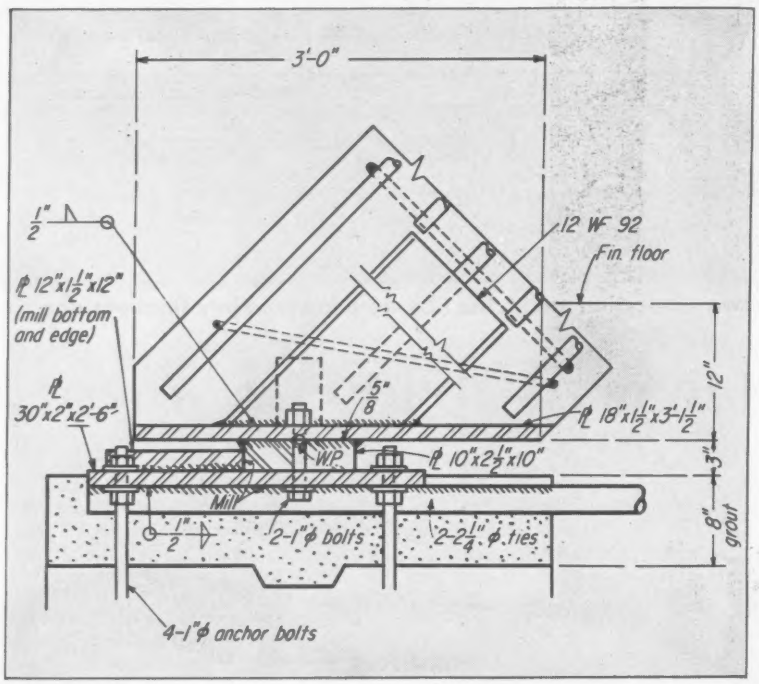
Two steel towers served as work platforms and braces during the erection. Crews began by erecting the arch at the end of the gym farthest from the casting bed.

(*Turn the page*)

Arches support roof of gymnasium for Fairfield University.



CROWN HINGE was simply designed for easy erection. Workmen joined the ribs with just three parts: a center hinge plate plus two high-strength bolts.



BASE HINGE transmits arch thrust to tie rods by shear; 12WF92, bedded in rib bottom, transmits shear between arch and base hinge assembly.

The first tower carried one end of the first half-arch during its erection while the other end of the rib was pinned to the abutment. After the second half of the arch was positioned, the tower was moved to the second arch, where it remained as a brace during erection of the rest of the arches. The second tower was used for the remaining nine arches—skidded from arch to arch as crews worked toward the rear of the gym and the casting bed.

On the tower platform, riggers held the crown of one half-arch on jacks just above the final position while truck cranes carefully lowered the opposite half-arch onto its base hinge and down onto the tower platform. Men on the platform connected the crown plates, and a hinge plate between them, with high-strength bolts, and finished the erection sequence by lowering the completed arch crown to its final position.

The erection firm used two 30-ton-capacity cranes for the arch lifting, with a third crane for steadying the segments.

Toughest part of the erection job was raising the half-arches from their flat position on the casting beds to a vertical plane and swinging them around into position on the site. Each segment was built with anchor bolts for two lifting eyes. While the ends of a half-arch were restrained with tackle, two truck cranes gently raised it off the stack and tilted it from horizontal to vertical. But that was just the first part.

Both truck cranes, sitting between the gym and casting bed, would face the stacks of arches to lift a segment; after getting it in the air, the cranes had to swivel with the load between them to face the gym.

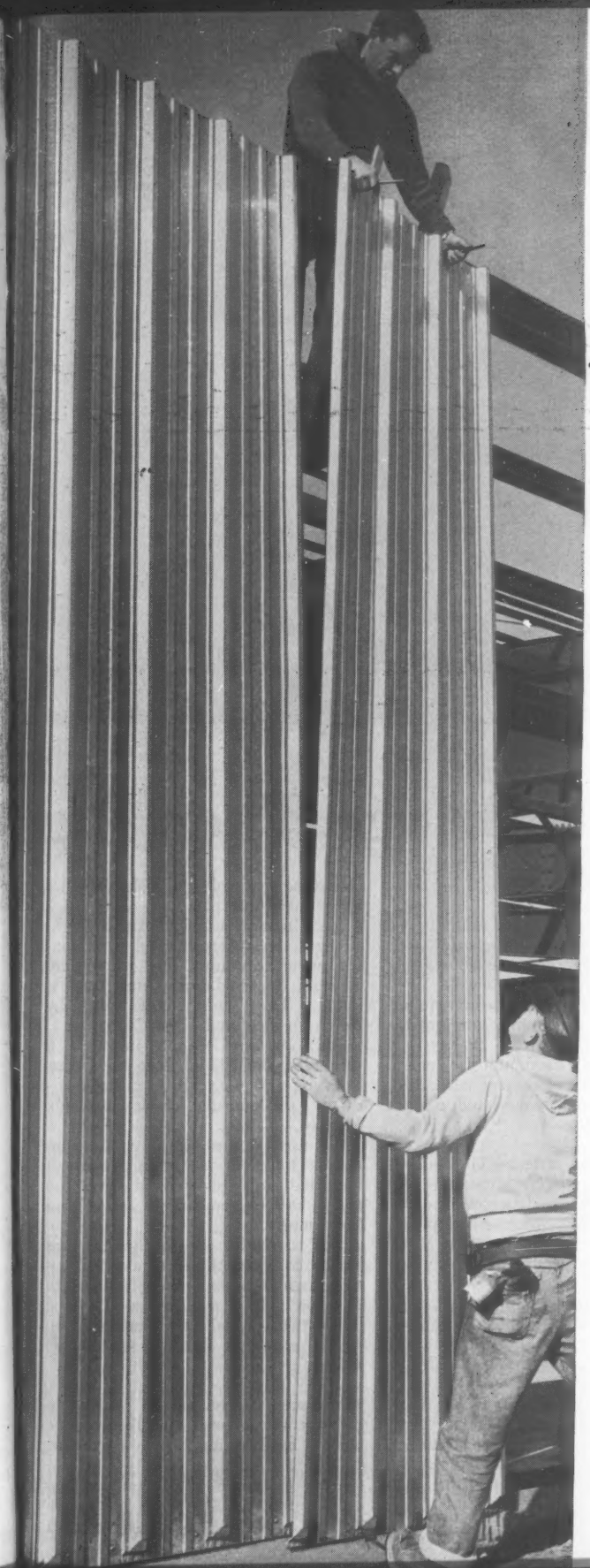
Each 94-ft-long segment weighed 26 tons. The task was like carrying a 5-ft strand of uncooked spaghetti by two threads through a crowded restaurant.

Slowly, first one, then the other crane turned toward the center, swinging the arch segment between them. When the cranes faced the gym, they moved together to the falsework tower. There, they lowered first the base hinge, then the arch crown into position.

As erection progressed, workers tied succeeding arches together with permanent purlins and temporary guys. Eight purlins—each a 10WF33—joined each arch across 18-ft bays. Guy cables laced the entire frame during construction. Each end arch was held with four cables; interior arches were cross-tied toward both ends of the building. All guys were tied down to U-bolt anchors cast in the concrete slab on grade within the building perimeter. This eliminated any need for individual deadmen outside the structure and provided a secure guying system. The guys and bracing towers came out only after carpenters had finished the roof deck.

Double tongue-and-groove 4x6-in. decking covers the completed frame. Over this is builtup roofing.

J. Gerald Phelan is the architect; John G. Phelan, Jr., is supervising construction of the project and Robert Mutrix is in charge of design. Anthony D. Ciresi was chief engineer for Fletcher-Thompson, Inc., Engineers. E & F Construction Corp. is the general contractor. Leake & Nelson Co. did the arch erection and structural steel work. All are Bridgeport, Conn., firms.



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Here's a switch in bridge building . . .

Contractor Erects Bridge, Then Digs Un

A contractor's ingenuity saved time and money in constructing a six-lane grade-separation structure in Chicago. He built the prestressed concrete bridge first, then dug out the highway underpass.

The three-span bridge carries Montrose Ave. traffic over Edens Expressway on 10 lines of cast-in-place, post-tensioned concrete girders.

No continuity is provided over the supporting bents. All three spans are simply supported. Each is 154 ft in length.

The 154-ft girders were considered too long to be pretensioned at a casting plant and transported to the site. Consequently, design plans and specifications called for them to be cast and stressed in position at the site.

• **Casting the girders**—But the contractor went one step farther. As an economy move, he cast the 30 girders on the existing grade; then excavated for Edens Expressway, which passes underneath Montrose Ave.

The 7-ft-deep girders were cast on plywood and other timber formwork supported on previously cast concrete mud-sills, or soffits, to distribute the weight of the heavy girders to the compacted soil.

The piers are individual shafts under each line of girders, on spread footings. These were constructed in advance of the girders.

Concrete in the girders were required to have a minimum compressive strength of 5,000 psi at 28 days. It contained 1-in. maximum-size aggregate, seven sacks of cement per cu yd, and 6 oz of air-entraining additive per sack of cement.

• **Post-tensioning systems**—The method of stressing the girders adopted for the job is the BBRV system developed in Switzerland by M. Birkenmaier, A. Brandestini and M. R. Ross. Material was supplied by Joseph T. Ryerson & Son, Inc., Chicago.

The Swiss firm's patents relate to the anchor or button head, heart of the system, which permits 40 wires or more within a single metal conduit to be stressed simultaneously.

Each girder was post-tensioned with seven tendons running the full length of girder. One tendon was positioned just above the bottom of girder. The other six were arranged in pairs, each taking the shape of a parabola, with the low point at midspan.

Each tendon consisted of 40 high-strength steel wires encased in 2.5-in.-dia. metal conduit. The wires were 0.25 in. dia, cold-drawn and stress-relieved. They are manufactured by American Steel and Wire Co.

Each 40-wire tendon imparted a total force of 360,000 lb to the girder. Stressing was done with a portable hydraulic jack capable of developing a force of 200 tons.

To insure utmost accuracy in measuring the force, Ryerson used equipment imported from Switzerland, since no comparable equipment was available in this country.

Post-tensioning of the girders was permitted after the concrete had attained a minimum compressive strength of about 5,000 psi. In good curing weather, this usually was performed 10 to 12 days after casting the concrete girders.

• **Stressing mechanics**—A threaded pull-bar was screwed into the recessed anchor head holding the 40 stressing rods.

The other end of the pull-bar was

igs Underpass

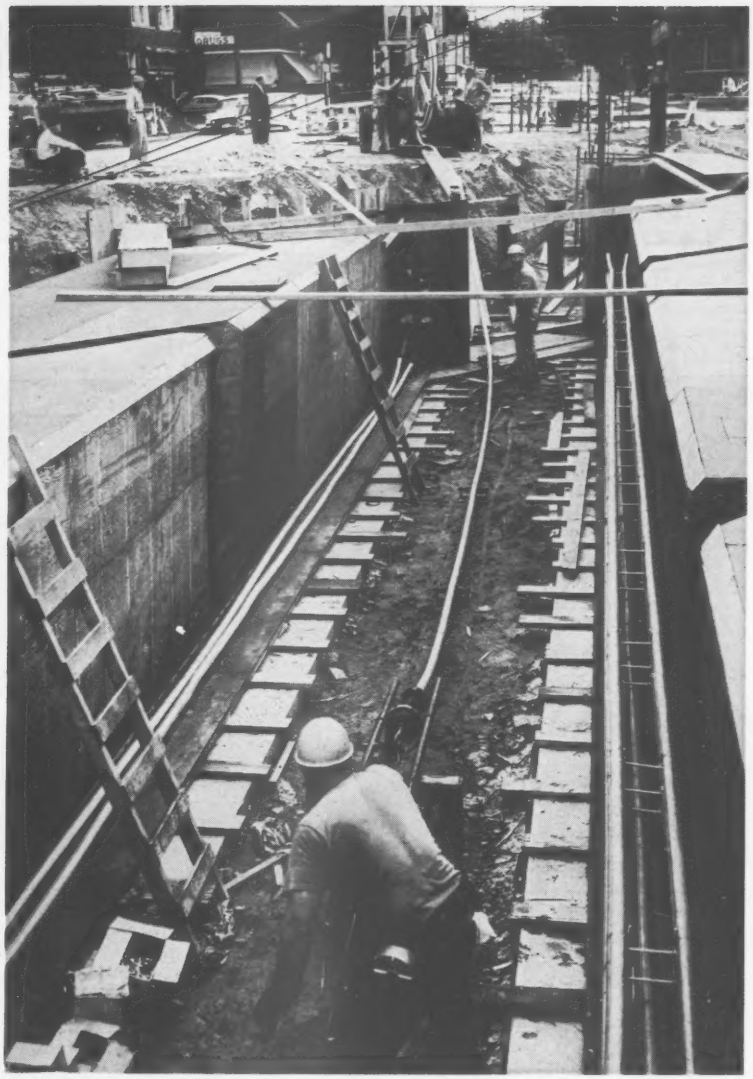
locked into the 200-ton hydraulic jack during stressing operations.

The outer periphery of the round anchor head also was threaded to engage a heavy lock nut. After a 40-wire tendon had been tensioned a total of 360,000 lb, this lock nut was screwed against a steel plate in bearing against the end of the girder. The pull-bar was then removed, and grout was forced into the tendon around the stressing wires under a pressure of 150 psi.

Total contract cost of the superstructure was $518,000, or $13.53 per sq ft, according to figures of the Cook County Highway Department.

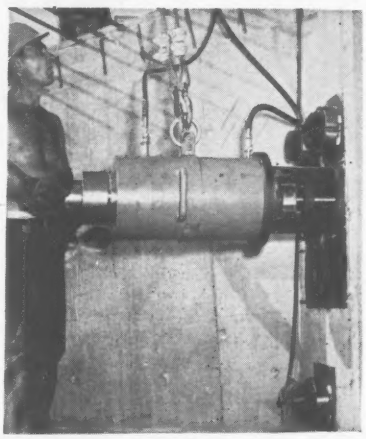
The bridge was built by the Cook County Highway Department under the supervision of Wm. J. Mortimer, superintendent, and Hugo J. Stark, chief engineer. R. O. Mortenson, engineer of bridge construction, supervised the construction.

The Thomas McQueen Co. was the contractor and Philip W. Joy was construction superintendent. The post-tensioning work was subcontracted to Joseph T. Ryerson & Son, Inc. The Preload Co., serving as consultants, prepared designs for the post-tensioned girders.



CASTING of the prestressed concrete bridge girders was done on the site. Tendons in metal conduit each consisted of 40 wires.

PULL-BAR is screwed into recessed anchor head. Then . . .



HYDRAULIC JACK tensions the 40-wire tendon to prestress the girder.

New, improved USS American Welded

strength of 75,000 psi...and a

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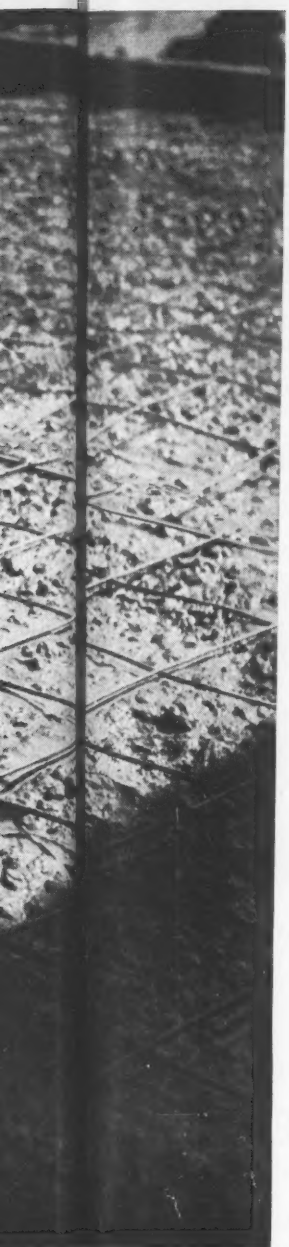
minimum yield point of 60,000 psi...



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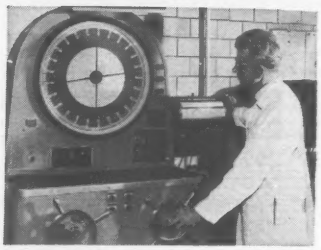

For more than 50 years, USS American Welded Wire Fabric has been doing an outstanding job of reinforcing all kinds of concrete work—from porches and walks to skyscrapers and highways. And now—because of its greatly increased tensile and yield strength—it will give even greater strength, longer life, increased freedom from cracking and less maintenance. Also, it will permit longer joint spacing for reinforced slabs on ground or less steel if present joint spacing is used. The new improved Welded Wire fabric will have a 75,000 psi minimum ultimate tensile strength with a minimum yield point of 60,000 psi.

Closely controlled laboratory tests show that if the conventional bond stress theory is applied to American Welded Wire Fabric's resistance to slip, fantastically high bond stress values of from 1,000 psi to 2,700 psi are computed. (See ACI Proceedings, Vol. 48, April, 1952.) Continuing bond test research under the direction of American Iron & Steel Institute has shown such good mechanical anchorage in the concrete as to permit this increase in the Tensile Strength of Fabric. American Steel & Wire is able to present this new product because of the tested bond values which enable designers to take advantage of a higher fabric yield point.

Just one example of the advantages of this improved fabric is in one-way slabs. The ACI Building Code 318-56 will allow unit tensile strength for fabric in main reinforcement of 30,000 psi in one-way slabs of 12-foot span or less, provided reinforcing members are ⅜" or less. Previously, designers were limited to 28,000 psi working stress with fabric, and only 20,000 psi with intermediate grade bars.

The new Welded Wire Fabric will cost no more. It will come in the same prefabricated rolls or sheets for easy handling and placing. Therefore, to get the improved product on your job at no extra cost, be sure to specify USS American Welded Wire Fabric.

USS American Welded Wire Fabric is available in a wide variety of styles, sizes, lengths and widths . . . in wire gauges from ½" diameter to 16 ga., and in longitudinal and transverse wire intervals of 2" to 16". Steel areas for all normal structural reinforcing in all types of construction are readily available. For more information on USS American Welded Wire Fabric—and its new tensile strength—write to American Steel & Wire, Dept. 986, 614 Superior Avenue, N. W., Cleveland 13, Ohio.

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#3 HY-Q Sluice Gates Eliminate Interference with Flow

SPECIFY RODNEY HUNT
HY-Q SLUICE GATES WITH FLUSH-BOTTOM CLOSURE
and get these 6 design advantages

Silt and debris become trapped behind the vertical sill of a conventional sluice gate installation (Fig. 1)—or in the trough required for bottom wedges when the gate bottom is mounted flush with the invert. The Rodney Hunt HY-Q Sluice Gate, however, eliminates both these traps (Fig. 2). With every raising of the gate, the seating surface is flushed clear by the unobstructed flow.

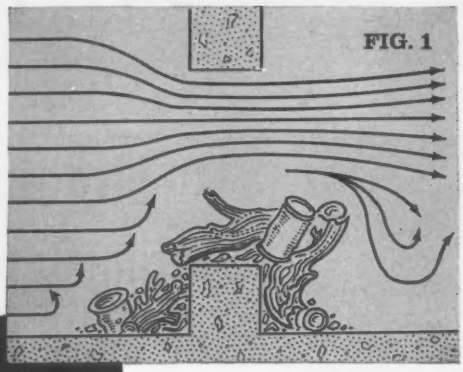


FIG. 1

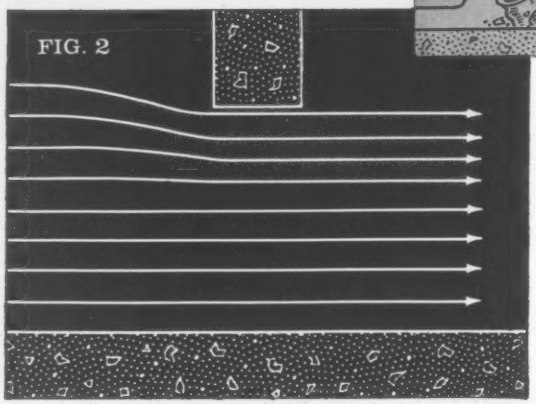
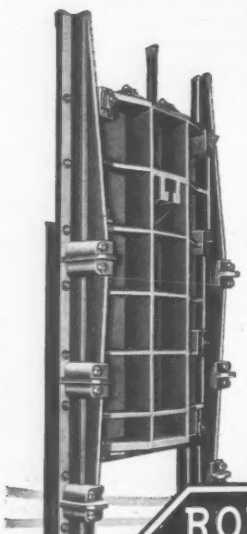
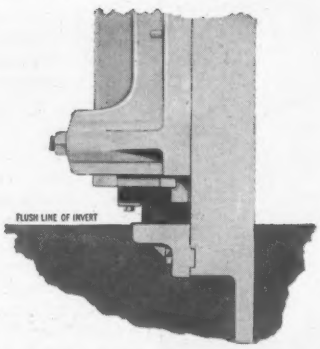


FIG. 2



The many advantages of the Rodney Hunt HY-Q Sluice Gate derive from the design of the resilient seal fastened to the bottom of the disc as illustrated at the right. This seal extends the full width of the disc and provides a cushioned closing at the stop bar *flush with the invert.* This flush-bottom closure assures—**1.** maximum flow—**2.** complete drainage without pumps or piping—**3.** elimination of silt and debris problems—**4.** maximum hydraulic gradient—**5.** lowest possible invert—and—**6.** construction economy.

In brief, the HY-Q gate offers unmatched design flexibility and construction economy for water control projects...with hundreds of gate sizes available from 6" x 6" to 144" x 144" and larger to meet your specific design requirements.



HY-Q The sluice gate with flush-bottom closure

RODNEY HUNT

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Serving water control engineers with equipment and engineering

Through ground bad enough to require needle-beam tunneling methods . . .

Tunnelers Dig Past Heavy Structures

T. J. Montgomery
City Engineer
Cincinnati, Ohio

Because potential damage claims make it risky business to tunnel through soft ground near heavy structures, Cincinnati's Metropolitan Sewerage District took extra care in planning and constructing the new East Branch Ohio River Interceptor.

The six-mile sewer will pick up sanitary flow from downtown Cincinnati and the hills to the east, and convey it to the new Mill Creek Sewage Treatment Works (see map) for primary treatment after the plant goes into operation this summer.

Before any contracts were awarded it was realized that the nature and location—in a highly industrialized area—created potentialities for big damage claims. There are several crossings of heavily traveled, main-line railroads, a crossing under the station tracks and platforms of the Cincinnati-Union Terminal Co., and under heavily loaded warehouses and other structures.

• **Experts called in**—Because of these hazards a firm of consulting engineers experienced in soil mechanics and tunneling was engaged early in the work.

The consultant carefully surveyed all buildings and structures along the route of the sewer, and photographed and recorded all pre-existing damage. Bench marks were established to determine amount of settlement.

Where the sewer follows improved streets, holes were cored through the pavement and iron pins were driven into the sub-grade to serve as check points for measuring settlement of the sub-grade. These were set on the sewer centerline and at intervals up to 25 ft on either side. Surface settlement in all cases has proven negligible or nonexistent at a transverse distance of 25 ft from the centerline of tunnel.

• **Whole line is tunneled**—For most of its length the sewer runs through a mixture of river-deposited clays, silts, sand and gravel (see typical boring log). Groundwater level fluctuates in response to the level of the Ohio River. In some areas considerable depths of man-made fill are in evidence. In two locations the sewer is on or in native bedrock, which consists of shale interspersed with thin beds of limestone.

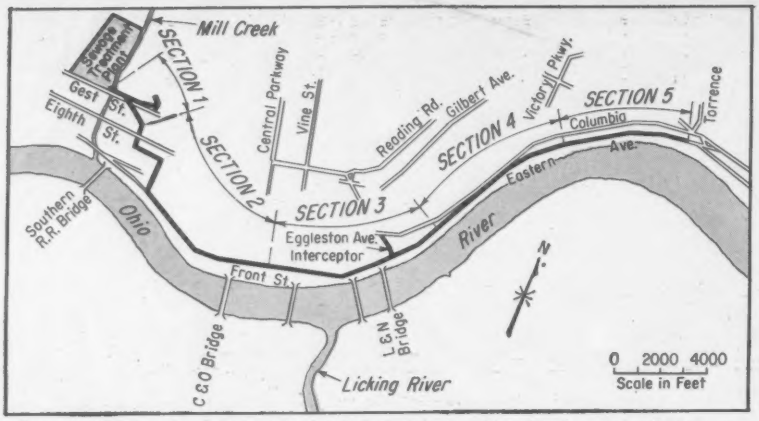
Because of the depth of the interceptor sewer and its location in a commercial and industrial area, it was necessary to construct the entire line in tunnel. The sewers range from 24 to 96 in. in diameter. Sizes 36 in. and larger are monolithic reinforced concrete in liner-plate rings. Sizes 30 in. and smaller are reinforced concrete pipe in liner-plate rings. Void space between pipe and liner plates is filled with 1:12 (cement:sand) zero-slump concrete.

• **Contractor picks method**—The specifications carefully avoid being too specific in telling the contractor what methods to use in tunneling. Compressed air on any contract is permitted with the approval of the engineer. If approval is given, the contractor is paid a lump sum to cover the cost of installing the plant.

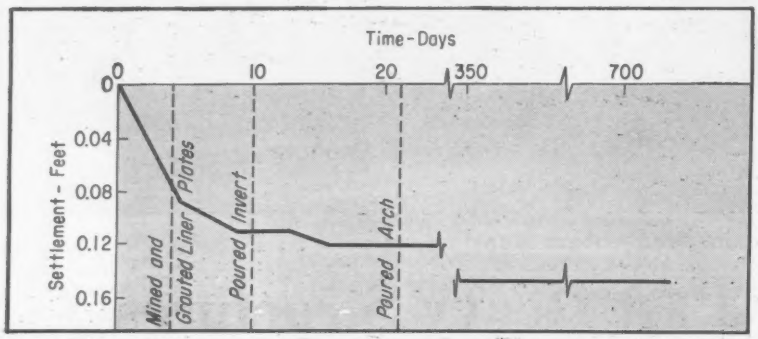
It was agreed early in the job that work would start at the location of a junction chamber about 850 ft from Millcreek in Section 1. The heading was to be under compressed air, because borings had given evidence of difficult groundwater conditions at this location. At the same time work would be started in free air through fairly firm clay in Section 2 at a location far removed from any critical structures.

• **Structures are unharmed**—The first critical structure passed was a steel gas holder in Section 2. This structure has a deep water-filled pit enclosed in brick masonry walls to serve as a seal. It extends below the invert of the sewer and is only about 16 ft from the centerline of the sewer at its closest point.

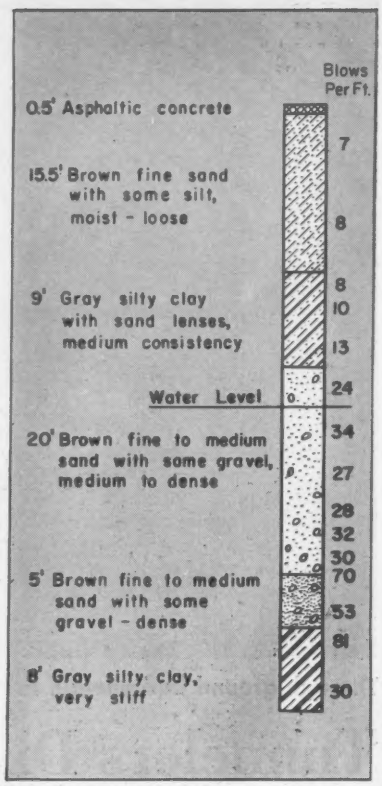
Since the tunnel face showed increas-



TUNNEL RUNS along Ohio River to Cincinnati's new Mill Creek sewage plant.



LONG-TIME SETTLEMENT of ground directly above tunnel was recorded as part of a check of ground settlement opposite a big gas holder. Holder did not settle.



TYPICAL BORING LOG: 2-in. split spoon under 350-ft-lb blows.

ingly wet sand seams as the gas holder was approached, the utility company was asked to de-water the pit while the tunnel was being excavated nearby. Even with this precaution, the tunnel face showed considerable water near the gas holder.

Maximum surface settlement above the sewer centerline at this location was 0.32 feet. However, the gas holder did not settle.

Another critical location was the vicinity of St. Anthony Church on Budd Street, Section 2. This 100-year-old brick building has a very heavy brick tower and steeple at the street line. The originally planned location of the sewer at this point was near the south curb line, within 22 feet of the steeple base. To avoid possible damage to the church, the sewer route was realigned near the north curb line, approximately 45 feet from the steeple.

Relocation cut by two-thirds the vertical load transmitted to the sewer from the tower. The shift also balanced the horizontal pressure from the tower with that from a three-story apartment house across the street.

Because of the church and other critical structures in the vicinity, this part of Section 2 was tunneled under compressed air. An attempt was made to use pressure up to 17 lb per sq. in., but the granular material would not contain pressures higher than about 10 lb per sq in. As tunneling proceeded it was necessary to pour the sewer arch very soon after the invert to help minimize loss of air. Maximum surface settlement over the sewer centerline near the church was 0.08 ft. There was no settlement of the church or other buildings.

About 150 ft of Section 2 is beneath one wall of a tire sales and storage warehouse. The building is one story with brick and tile walls and long-span steel trusses supporting a flat roof. This section of tunnel was driven under air at pressures of 5 to 10 lb per sq in. Readings taken on the walls over a period of several months indicated a maximum settlement of 0.04 ft, and then no additional settlement. The building shows no cracks due to settlement.

A short distance in Section 2 and about 800 ft of Section 4 were tunneled through bedrock, a fairly well consolidated shale with thin limestone interbeddings. This material required blasting with light shots using millisecond delays. The pattern, depth and loading of holes varied somewhat.

The contractor was permitted to use horseshoe-shaped rings with wood lagging in lieu of tunnel liner plates in the rock.

Since the shooting was done along a heavily traveled street with business houses and residences, the consultant checked the blasts on two occasions with an accelerograph. He found the energy ratio well within safe limits.

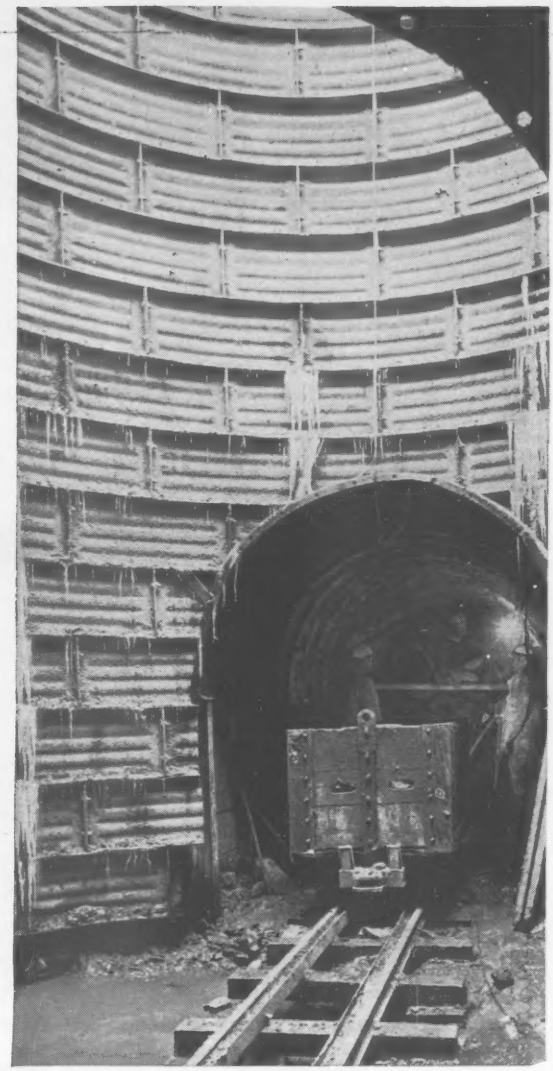
The safety record on the work has been excellent. There have been no permanent injuries and very few lost-time accidents. Approximately 20 tons of dynamite have been used without injury or damage, and injuries or property damage to the public have been practically non-existent.

Construction of the sewer was publicly bid in six parts. One section was awarded to McManus-McCarthy, Inc. The others were awarded to the Foley Construction Co. Both are Cincinnati firms. By agreement with the city, all six contracts have been carried on as a joint venture of Foley-McCarthy.

Expected completion date for the job is July, 1959. The estimated contract cost is approximately $6.5 million. The writer is in charge of the work for Cincinnati. Consulting services have been furnished by King and Gavaris, New York City, represented by Gregory P. Tschebotarioff.

Excavation and installation simultaneous

Flanges within reach—all bolting in the open



Complete stability in shaft-tunnel construction

How Continuous Flanged Liner Plates Can Speed Your Tunneling Operation

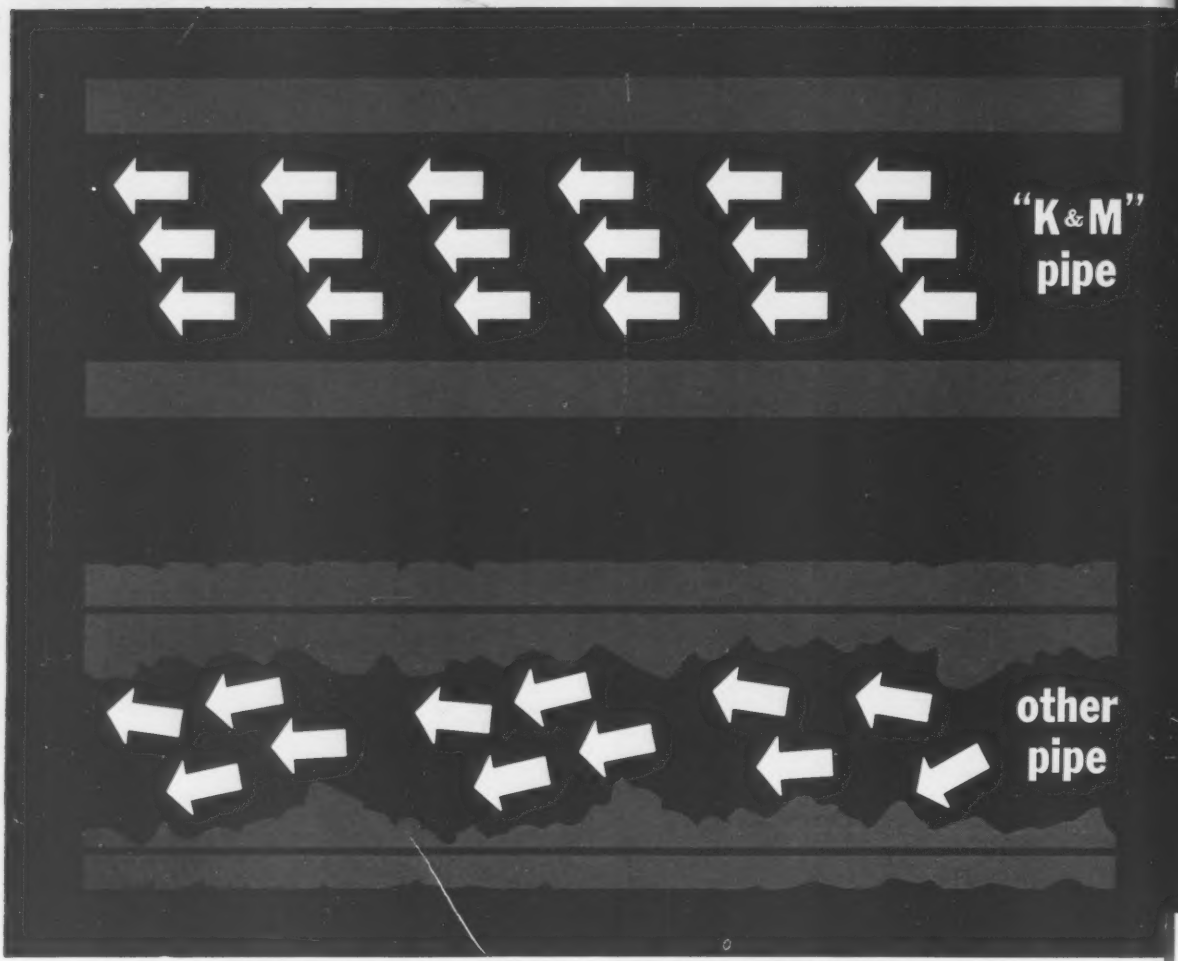
A major factor in the speedy construction of the Schuylkill Interceptor System of Philadelphia is the use of COMMERCIAL steel liner plates, continuous flanged with solid corners. The extreme ease by which these plates can be installed is due to simplified flange-to-flange bolting—all in the open.

Four thousand eight hundred feet long and averaging thirty-five feet below the surface, one of these tunnels passes under railway lines and heavy city traffic... demanding roof support of maximum strength. In addition, unstable and unpredictable ground conditions makes tunneling difficult and working conditions hazardous.

Since the COMMERCIAL steel tunnel support system was selected, the strength, safety, speed and ease of erection required for this complex project is now assured. Liner plates with precision-matched bolt holes provide quicker, more simplified erection and are of sufficient thickness to furnish the necessary shoring strength to insure uninterrupted lines of travel directly above.

COMMERCIAL steel support systems are custom made to fit tunnels or shafts regardless of size or ground condition. For more complete details on how these systems can simplify and speed up your vertical shaft, surface or sub-surface tunnel project—help make it safer—send today for your copy of Catalog 300-C1. Address: Commercial Shearing & Stamping Company, Dept. E-21, Youngstown 1, Ohio.

COMMERCIAL
shearing & stamping



Maintenance is practically zero! "K&M" Asbestos-Cement Pressure Pipe is non-electrolytic, non-tuberculating, and corrosion-resistant. Pumping costs remain constant. Never increase with the age of "K&M" Asbestos-Cement Pressure Pipe.

Connections are permanent and water-tight. The FLUID-TITE Coupling gaskets grow tighter as pressure climbs. As water mains fill, the self-energized rubber gaskets expand.

Here's how "K&M" Asbestos

stretches your

Write to us today for more information on "K&M" Asbestos-Cement Pressure Pipe and FLUID-TITE Couplin

Installation is fast, low-cost! You don't need skilled labor, heavy machinery, feeler gauges or heavy-weight coupling pullers. Neither is the weather an obstacle. Unskilled labor can lay "K&M" Asbestos-Cement Pressure Pipe and FLUID-TITE Couplings quickly and economically. In fact, with the FLUID-TITE Coupling, you can lay more pipe per hour than ever before. To connect, merely lubricate the tapered edge of the gasket in the FLUID-TITE Coupling, then slide in the pipe.

Cement Pressure Pipe

budget further!

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KEASBEY & MATTISON
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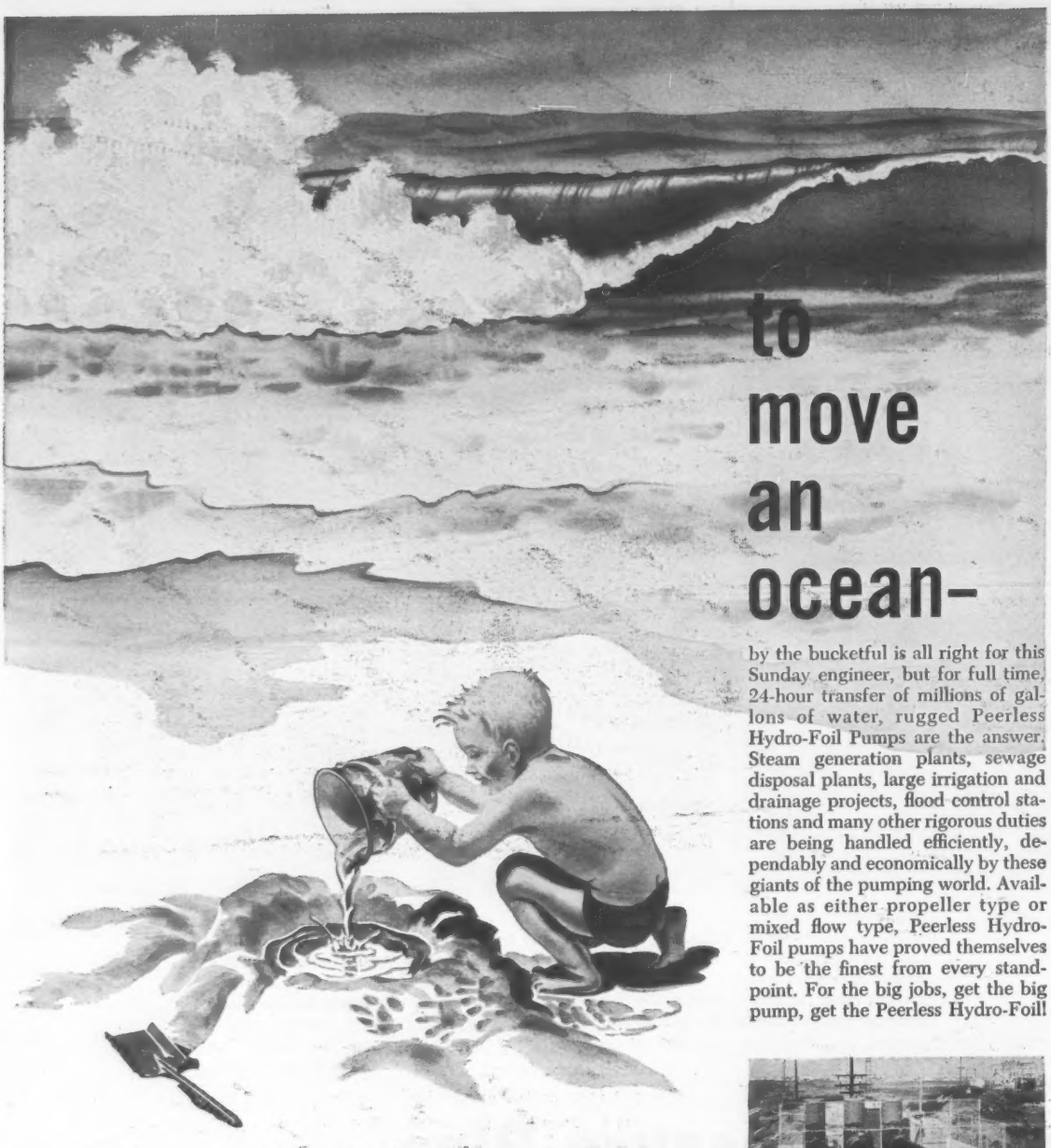

to move an ocean–

by the bucketful is all right for this Sunday engineer, but for full time, 24-hour transfer of millions of gallons of water, rugged Peerless Hydro-Foil Pumps are the answer. Steam generation plants, sewage disposal plants, large irrigation and drainage projects, flood control stations and many other rigorous duties are being handled efficiently, dependably and economically by these giants of the pumping world. Available as either propeller type or mixed flow type, Peerless Hydro-Foil pumps have proved themselves to be the finest from every standpoint. For the big jobs, get the big pump, get the Peerless Hydro-Foil!

WRITE FOR ILLUSTRATED BULLETIN NO. B-148

PEERLESS PUMPS

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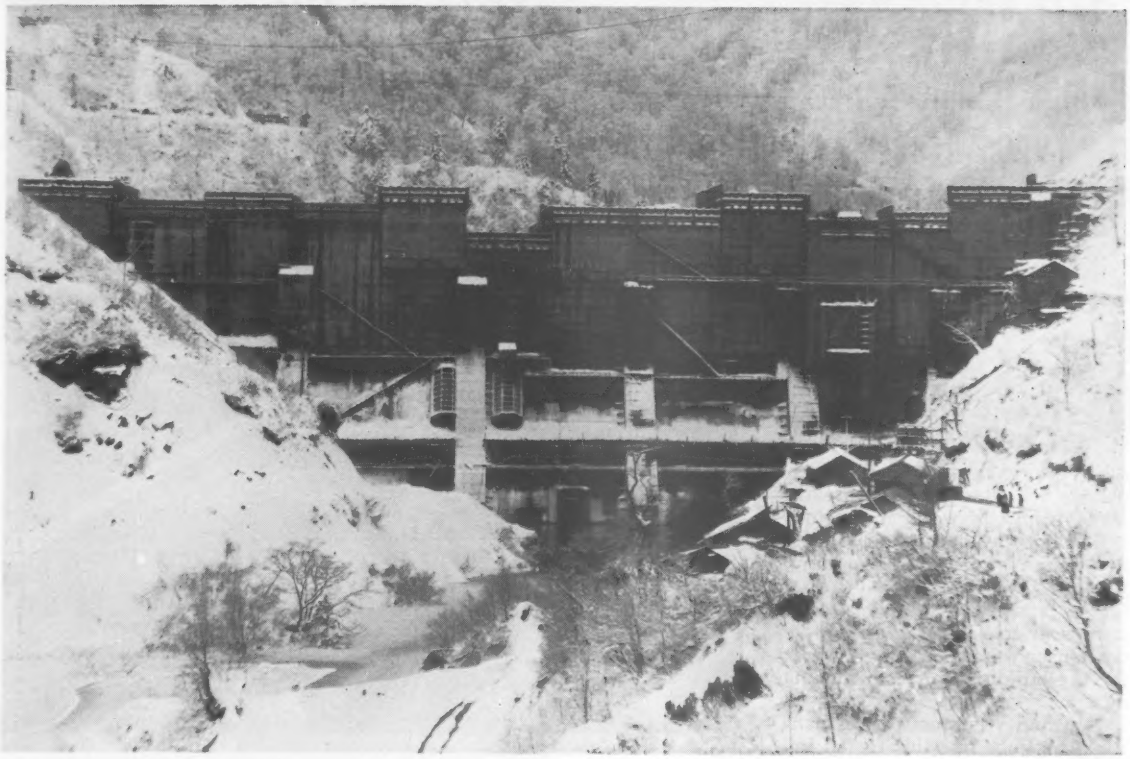


Nearly two decades after Japanese began work . . .

Reservoir Starts Filling at Arimine Dam

Nineteen years after the start of construction, Japan's Arimine Dam has passed a milestone—buildup of water has begun in the reservoir.

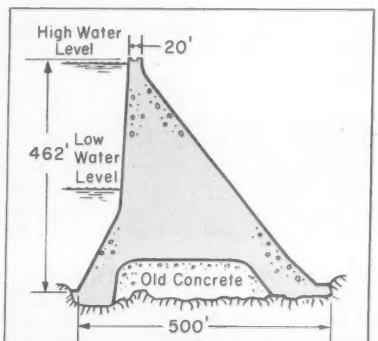
The project was started in 1940 and before World War II stopped construction, 180,000 cu yd of concrete had been placed.

The dam is a concrete gravity-type structure 1,650 ft long. It will attain a height of 462 ft on completion this fall. Its present height is about 400 ft.

When Hokuriku Electric Power Co. took up the job again in 1951, they were faced with the problem of what to do about the 10-year-old concrete. They wanted to add 100 ft to the original design height of the dam. But uncertainties about the concrete's strength, cracking and weathering bothered the engineers. They were also concerned about stresses that might concentrate at the old corners with the addition of new concrete.

They took core borings and found the concrete strong enough to stand the height increase. They also found that fresh, unweathered concrete lay close beneath the surface and that most surface cracks did not extend to the foundation. Photoelasticity studies showed that overstressing at the edges could be avoided by rounding the old corners.

As a result of the engineering investigations, two to eight in. of old concrete were chipped away, the old edges were rounded to 33 ft radius and the cracks were grouted. Fifty tons of grout were injected.



OLD CORE had to be chipped clean, rounded on edges and grouted.

Arimine Dam is located in Toyama Prefecture, Honshu Island, on a tributary of the Joganji River. Storage capacity of the reservoir will be about 144,000 acre-ft. Powerhouse capacity will total 257,400 kilowatts. Project cost will be about $91.7 million.

Mexico City Public Works Gets $32-Million Program

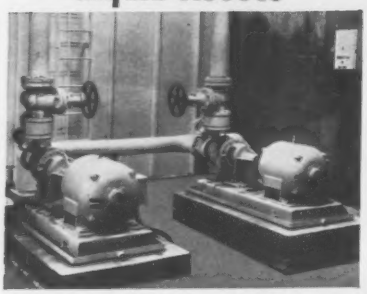
Mexico City will spend $32-million this year on a public works program designed to stop the city's sinking and to build new water catchments, freeways and underpasses in congested areas, and 2,000 low-rent apartments.

Three large indoor markets and 20 schools will be erected as part of the program. Two major traffic arteries will be converted to freeways.

A long-term project will build up the city's water supply by constructing catchments. A series of storage tanks, dams, pumping stations and collectors will be installed this year.

The Gran Canal, the city's giant open sewer (ENR Oct. 2, 1958, p. 23), will be repaired and strengthened.

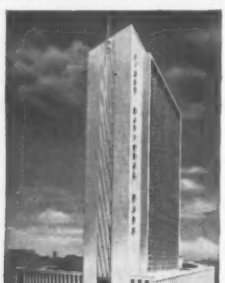
WEINMAN
Pumps Handle Bank's Liquid Assets



Above are the two Weinman pumps which deliver domestic water from city water mains to a 27th floor pressure tank of the new First National Bank building, Denver. Each pump has a 200 GPM capacity. Other Weinman pumps in this installation handle condenser water and chilled water for the building's air conditioning system.

You find Weinman pumps handling big jobs like this for an important reason . . . they can be depended on to give efficient, trouble-free service, without fail. You'll be interested, too, to know that Weinman pumps save money on original cost and maintenance costs.

For complete information, call your Weinman Pump Specialist. He's listed in the Yellow Pages of your telephone book. Or, write us direct.



First National Bank building, Denver, Colorado. Architects, Raymond Harry Ervin & Associates. Mechanical Engineers, Marshall & Johnston. General Contractors, Mead & Mount Construction Company. Mechanical Contractors, Natkin & Company. All are Denver firms.

THE WEINMAN PUMP MFG. CO.

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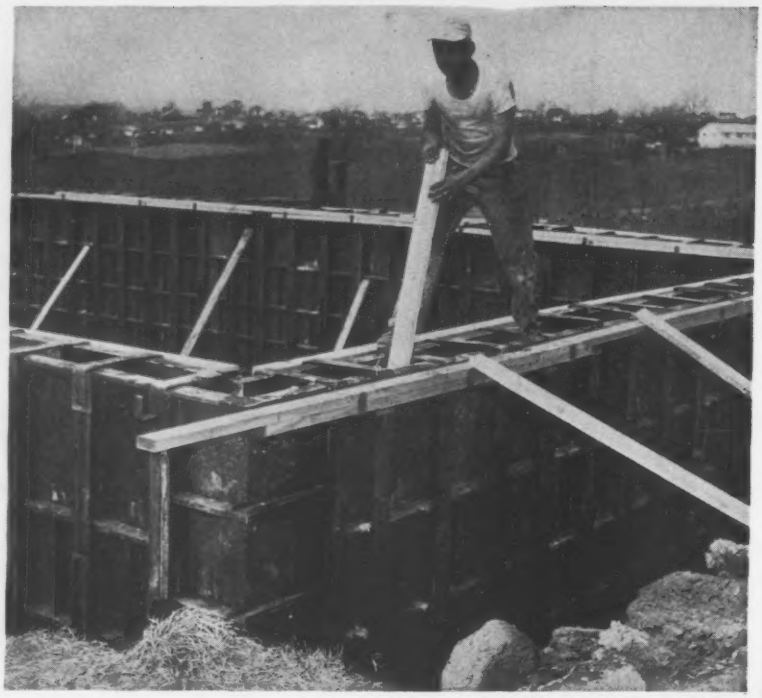
Centrifugal Specialists

Field and Office



Concrete Walls Without Tie Rods

A Cincinnati builder has developed a steel-form method of concreting foundation walls quickly and without the usual tie rods to prevent form buckling.

Leo D'Amico's forms are 12-ga steel with double-turned edge flanges and channel stiffeners. The 18-in. wide, 78-lb, panels are joined with shoes that slip down over adjacent flanges and top brackets that hold inner and outer forms together. There's nothing else holding the two faces together for their entire 8-ft height. At the bottom, clamps set into the footings prevent the forms from spreading during placing of concrete.

Each panel is interlocked with the next and held with long steel clamps, which slide down over the joint.

Another method D'Amico has used is to install a single line of ties at the panel bottoms. The line is later covered on the interior side by the slab on ground.

Speed is one advantage of the forms. The builder says four men concreted a 30-cu-yd wall at 10:30 am and pulled the forms off at 5:30 that afternoon. He claims the forms allow use of a lower slump concrete than usual and help speed the job.

With the forms, tie-rod leaks are eliminated and finishing costs reduced. D'Amico claims the units cost less than comparable plywood panels and will last indefinitely.

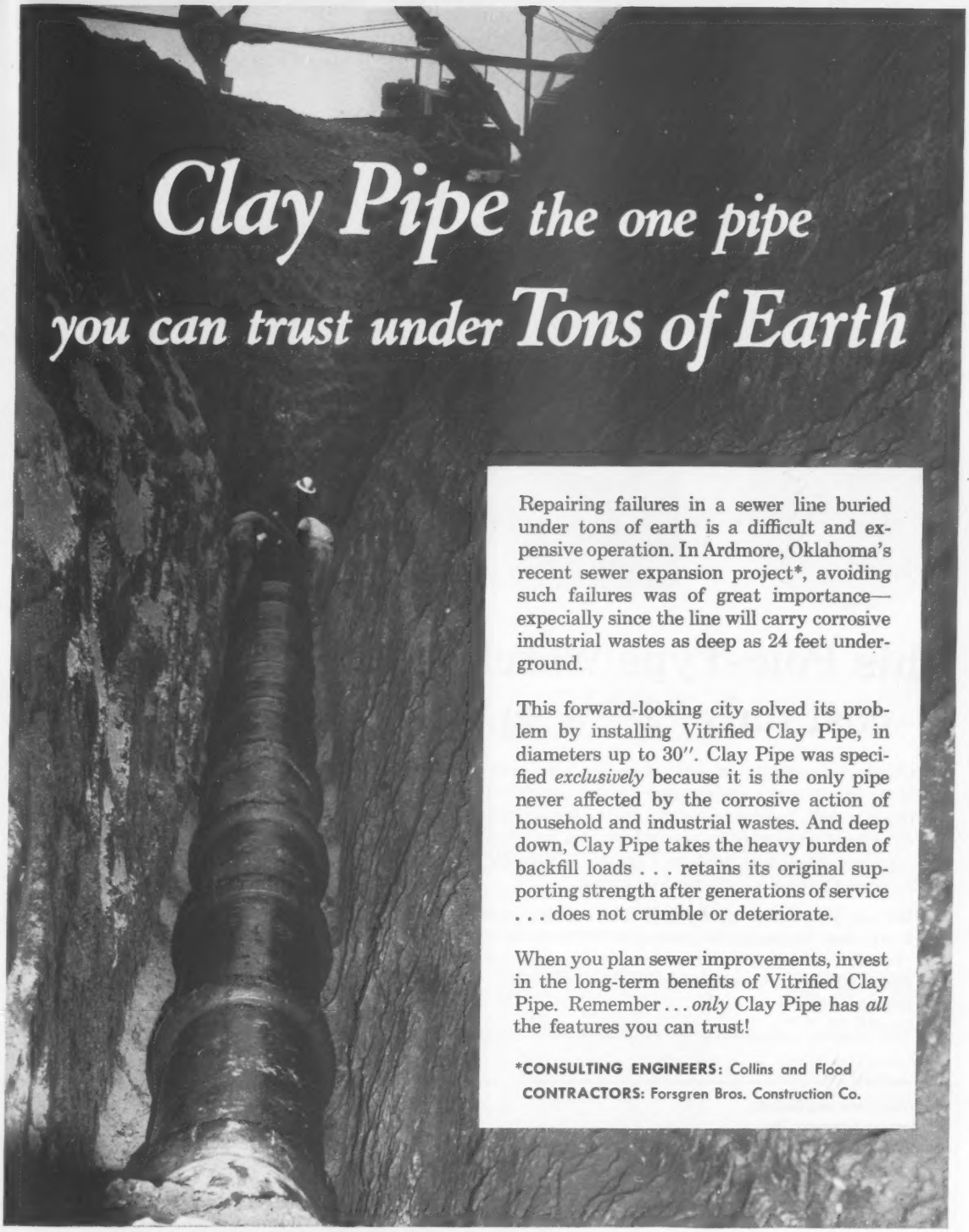
German Firm Floats Steel Girders To Bridge Site

By making barges out of the girders for a new bridge over the Ruhr River, the German firm of Krupp has been able to transport the members economically from its fabricating plant at Rheinhausen to the bridge site at Mulheim, a distance of about 15 miles.

There, a floating crane has lifted them onto temporary supports. The bridge will be completed and placed in service in this position. Later it will be moved sideways onto the permanent piers.

The girders are of box type so that their conversion to barges was easily accomplished by welding a temporary bulkhead at each end. Eight girders were so altered, six of 132-ft-span and two of 50 ft. The new bridge will replace the old Schlossbruecke, a masonry arch structure whose narrow roadway constitutes a serious bottleneck.

(*Field and Office continued, p. 52*)



Clay Pipe the one pipe you can trust under *Tons of Earth*

Repairing failures in a sewer line buried under tons of earth is a difficult and expensive operation. In Ardmore, Oklahoma's recent sewer expansion project*, avoiding such failures was of great importance—expecially since the line will carry corrosive industrial wastes as deep as 24 feet underground.

This forward-looking city solved its problem by installing Vitrified Clay Pipe, in diameters up to 30″. Clay Pipe was specified *exclusively* because it is the only pipe never affected by the corrosive action of household and industrial wastes. And deep down, Clay Pipe takes the heavy burden of backfill loads . . . retains its original supporting strength after generations of service . . . does not crumble or deteriorate.

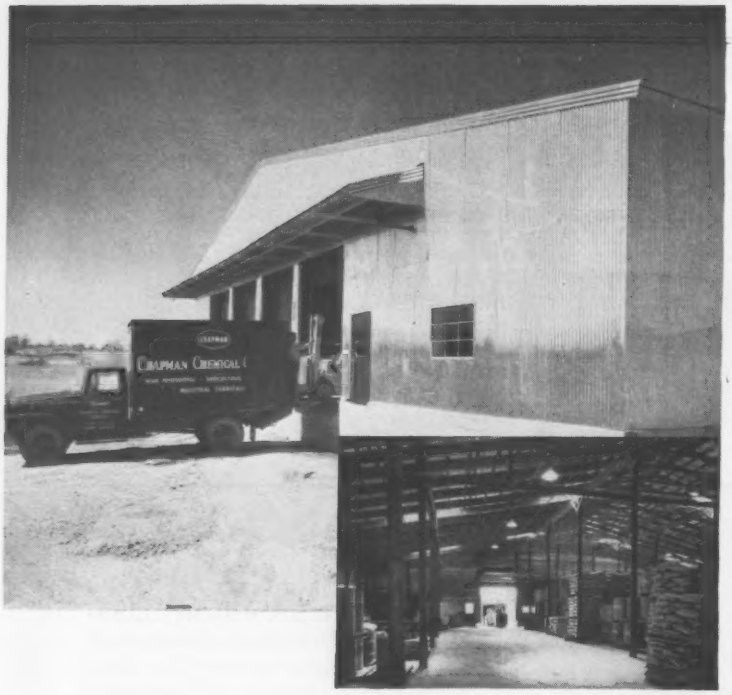
When you plan sewer improvements, invest in the long-term benefits of Vitrified Clay Pipe. Remember . . . *only* Clay Pipe has *all* the features you can trust!

***CONSULTING ENGINEERS:** Collins and Flood
CONTRACTORS: Forsgren Bros. Construction Co.

C-259-2

Vitrified **CLAY PIPE** *Never Wears Out*

NATIONAL CLAY PIPE MANUFACTURERS, INC. 1820 N Street, N. W., Washington 6, D.C.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio • 703 Ninth & Hill Bldg., Los Angeles 15, California • Box 172, Barrington, Illinois • 1401 Peachtree St., N. E., Atlanta 9, Georgia



This Pole-Type Warehouse cost only $2.00 a sq. ft.

Chapman Chemical Company, Memphis, Tenn. erected this 100 ft. by 210 ft. warehouse for only $2.00 a square foot including retaining wall, floor and sprinkler system. It has plastic skylights, 4 overhead doors in front, one in back plus the usual pedestrian entrances. Aluminum Products Company, Zelienople, Pa. is the Koppers Qualified Contractor who built it.

Because it is constructed on Koppers pressure-treated poles, it will last for generations with practically no maintenance. If you are planning to build, investigate Koppers pole-type construction, the economical way to build a sturdy, permanent structure—fast.

For complete information fill out and mail the coupon today.

Wood Preserving Division C-28
Koppers Company, Inc.
797 Koppers Building, Pittsburgh 19, Pa.

Please have a Koppers Qualified Contractor call on me.

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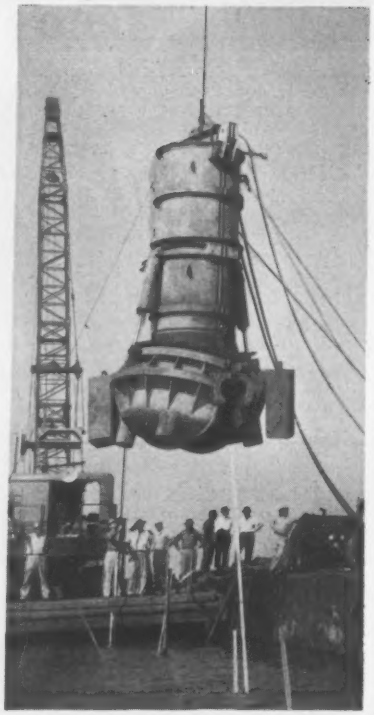
Company_____

Address_____

City_____ Zone____ State_____

KOPPERS **POLE-TYPE BUILDINGS**



Underwater Pipe Repairs Can Be Done From Caisson

Underwater repairs and connections to pipelines in depths as great as 50 ft can be made with the use of a caisson developed by Interstate Oil Pipe Line Co. of Shreveport, La., and Esso Research & Engineering Co., Linden, N. J.

The main part of the caisson is its bell-shaped bottom. It is 7 ft in diameter and has a vertical split, with pipe sleeves midway up the split. The two halves of the bottom unit open and close like jaws. They are powered by two hydraulic rams.

The top part of the caisson is made up of cylindrical sections, 5 ft in diameter. These sections, 6 ft high, are added or removed to adapt to various water depths.

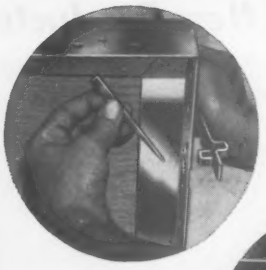
When mud is cleared from a pipeline, the 16,000-lb caisson—its jaws open—is lowered over the pipe. The hydraulic rams close the jaws around the pipe. A positive, flange-type hydraulic seal, gasketed all around, keeps water from welling into the caisson. Workmen can climb down to the pipe on a ladder.

A neoprene rubber sleeve connecting the top and bottom sections permits the jaws to open and close. As many as twelve 3,900-lb weights can be added to overcome the buoyancy of the evacuated caisson. The jaws can be adapted to line ranging in diameter from 2 in. to 20 in.

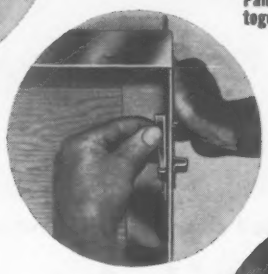
simple
tie
installation...

secret of FASTER CONCRETE FORMING

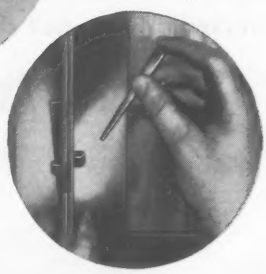
SECONDS
TO INSTALL
UNI-FORM TIE
AND ASSEMBLE PANELS



1. UNI-FORM Tie Loop placed in square tie hole of Panel.



2. Tie Key set into the Tie Loop. Panel and Tie are now locked together into integral unit.

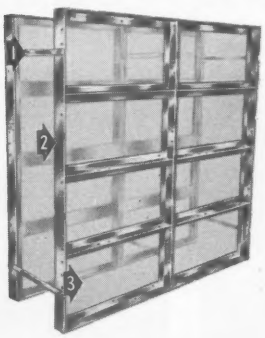


3. Next UNI-FORM Panel is placed in position. Tie Loop automatically enters square tie hole. Key is dropped in—assembly is complete. NO COMING BACK TO "FISH" TIES.

When you can tie and lock two concrete form panels in a few seconds, you're forming concrete fast! This is exactly what you can do with the UNI-FORM Panel System—the fastest system of forming concrete ever developed.

Faster tieing is only one of many UNI-FORM Panel features that makes them *the* pre-fab forms contractors are using on every kind of concrete construction. Write for the UNI-FORM Panel System Catalog and full details . . . or, call your nearby Universal Distributor or Branch Office for personal attention immediately.

UNI-FORM PANELS ERECT INTO A TIGHT, RIGID, AUTOMATICALLY ACCURATE CONCRETE FORM



1. Ties spread, lock UNI-FORMS into a form with automatically accurate wall thickness.
2. Steel frame provides structural strength and rigidity. Minimum alignment and bracing.
3. Best Exterior Grade Plywood face provides nailing surface. Easily turned for further re-uses.

"Products from the Gold Tool Room"

UNIVERSAL FORM CLAMP CO. 1238 N. KOSTNER AVENUE • CHICAGO 51, ILLINOIS

BRANCH OFFICES and WAREHOUSES:
ATLANTA BALTIMORE CLEVELAND HOUSTON
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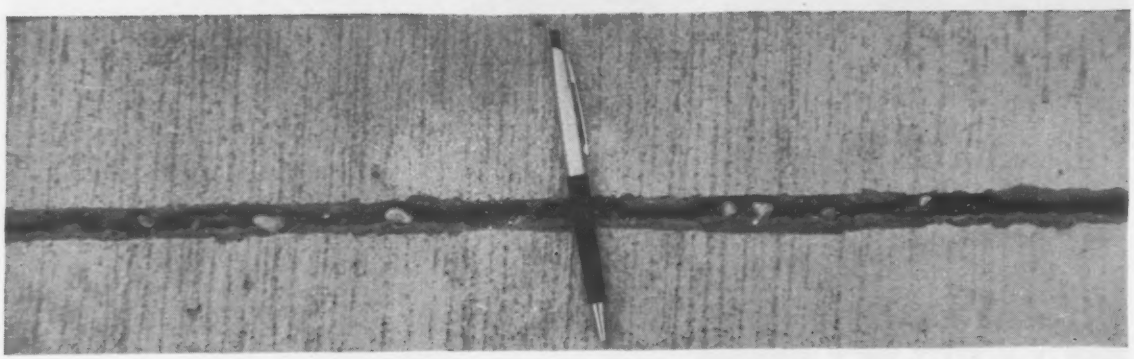


Cracked and clogged conventional pavement joints may become a thing of the past if . . .

Unitube: A New Way to Make Joi

HERE'S WHAT IT IS: A strip of 30 gage metal shaped to form a void.

It's a little strip of shaped sheetmetal. But it's out to do a big job—replace all conventional methods of making joints in concrete pavements. And it may eventually succeed in doing just that.

Called Unitube, it's a flexible tubular joint former that is set permanently in place during paving operations to provide either transverse or longitudinal joints, or both.

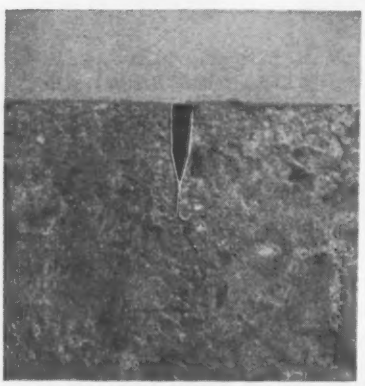
It's light and easy to handle, fast and accurate to install. Under almost any circumstances it's competitive in price; under most conditions it can be used with appreciable savings.

More important, it eliminates most of the problems now posed by installing, curing, cleaning and maintaining joints. And if the pictures above are any indication, it will probably take the "thump" out of a ride on concrete pavements.

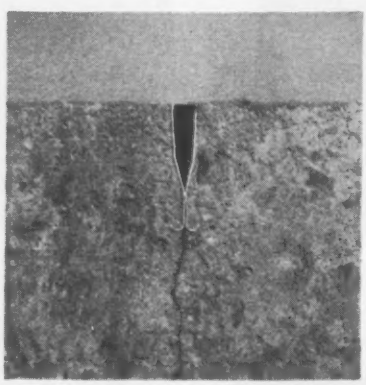
These sound like broad claims—and they are—but the results of laboratory and field tests, the record of some million feet already installed within the last few months on highways and airports, plus the quick acceptance of the product by the few engineers familiar with it, indicate that these claims are not exaggerated.

Unitube is fabricated from 30-gage galvanized sheets to provide separation between concrete slabs that is uniform both in width and depth. Its standard depth is 2¼ in., but it is also available in greater depths to meet either T/4 or a T/6 specification (with the made joint equaling ¼ or ⅙ the pavement thickness. The standard length is 12 ft but it is available in varying lengths, either straight or rolled to a parabolic curve if required. A 12-ft strip weighs about three pounds.

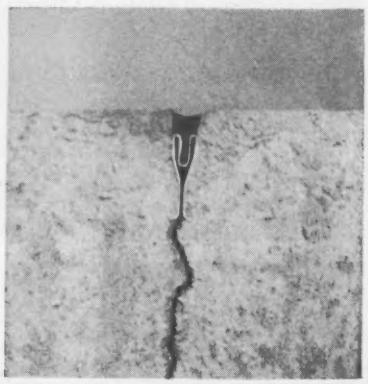
The ⅜-in.-wide void created by the Unitube strip is rectangular at the top and pointed at the bottom, where the metal sides are brought together to deepen the plane of weakness. The hook-like curvature of the bottom



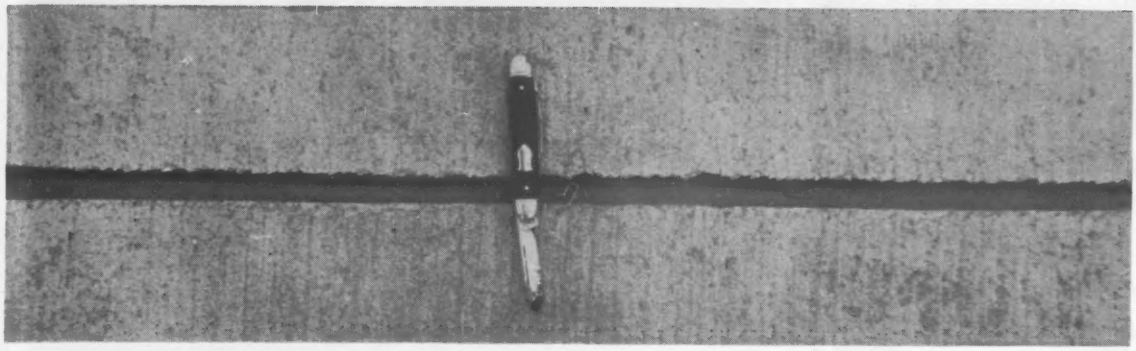
HERE'S HOW IT WORKS: Unitube is set in plastic concrete . . .



Hair line crack develops in the plane of weakness created by the strip.



Wide cracking from contraction of slabs spreads Unitube, but does not break seal.



tight seal of Unitube joints gains wide acceptance.

Joints in Concrete Pavement

edges of the unit anchors each side of the tube to opposing sides of the plane of weakness. Thus, when contraction and subsequent cracking occurs, the tube spreads, and the flanges, imbedded in the concrete, provide a waterstop.

• **No separate joint forming**—When Unitube is used, the joint forming becomes part of the paving operation. A simple self-propelled machine, available from the manufacturer on a rental basis, is included in the paving train immediately behind the finishing machine and just before the drag. With a three-man crew the semi-automatic machine accurately inserts the Unitube sections at a speed equal to that of the rest of the paving train.

Nello L. Teer is placing 3,000 ft of 24-ft-wide pavement per day at Smithfield, N. C. And at the end of each day's work his men have installed 5,400 ft of Unitube—3,000 ft of longitudinal joint and 2,400 ft of transverse joints.

On an interstate job near Plant City, Fla., Ballinger Paving Co. is also placing 3,000 lin. ft of pavement, but because the transverse joints are on 20-ft centers, he is installing 6,600 ft of Unitube every day—and doing it with no delays in his paving operation.

Insertion of the Unitube does not complete the jointing operation—there is yet crimping of the tube and placing of the joint sealer—but it does form and protect the joint so that it needs no further care or attention until a convenient time even months later.

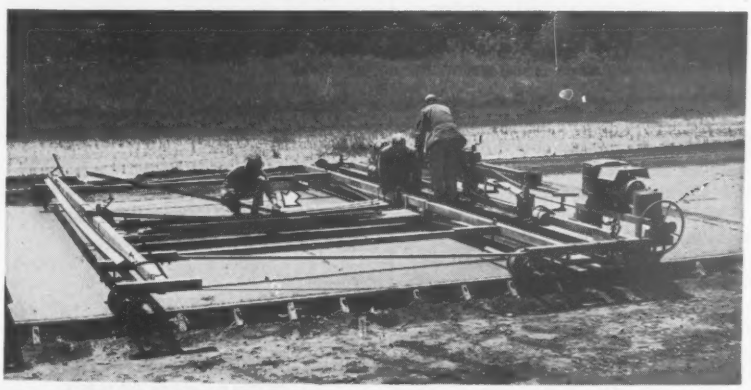
The advantages of being able to form the joint and then forget it, are many—particularly when compared to the problems arising from the sawing of joints.

With Unitube, there is no danger of uncontrolled cracking resulting from too long a delay in cutting the joints; there can be no raveling from the too early use of a saw. When liquid membrane cure is used, Unitube protects the joint and eliminates joint sealer bond failures resulting from contaminated joint walls. If curing is accomplished by straw, plastic or canvas covers, these do not need to be touched until the curing is complete.

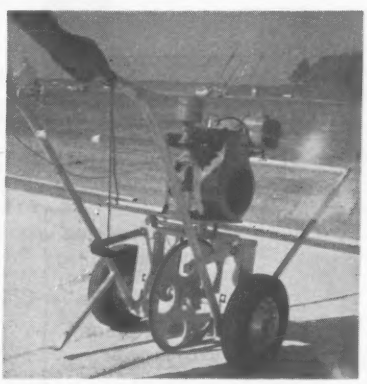
After crimping, the sides of the Unitube are in effect spring-loaded against the walls of the joint and will expand or contract in a bellows-like fashion. In a fatigue test of this bellows action, Unitube was successfully subjected to more than 100,000 expansion and contraction cycles. The spread was $\frac{1}{8}$ in., the speed was 350 cycles per minute.

One economy not immediately apparent—but often very important: Unitube permits the use of any suitable aggregate, no matter how hard. Often contractors will by-pass readily available—but extremely hard to saw—aggregate in favor of a more distant and more expensive material that will be easier on the blades.

Unitube has now been installed in



HERE'S HOW IT'S INSTALLED: Three men riding a self-propelled machine follow the last finisher to set longitudinal (arrow) and transverse strips.



Crimping is done at the rate of 5,000 ft per day by small machine and one man.

"DRILLED MORE THAN 100 HOLES in Hard Concrete WITHOUT RESHARPENING" (*)

IMPOSSIBLE with steel star drills! ROUTINE with the NEW ENGLAND

Thunder-twist®

Carbide-Tipped MASONRY BITS

Most economical bit you can use in any electric or pneumatic hammer! Drills in any masonry from brick to granite. Does the work of 16 star drills. And it's a one-man operation! Exclusive combination of vertical and spiral flutes provides positive dust removal . . . no packing, stalling, or binding. Tops in economy and efficiency on *every* job. Sizes: 3/16" to 1½" diameter. Extended lengths up to 18". Send for free drilling manual.

Other New England Carbide-Tipped Bits Include:

Cyclo-twist®

Bits for rotary drilling of ordinary masonry.

Cyclo-Core®

Multi-Tipped Bits for rotary drilling of hard masonry.

NEW ENGLAND CARBIDE

Designed, Engineered, and Proven for the Job.

(*) Write for proof of performance

Send for Free "MASONRY BIT SELECTOR GUIDE" and Start Using Today's Most Economical Masonry Bits

New England CARBIDE TOOL CO., INC. 55H Commercial St. Medford 55, Mass.

Please send me a copy of the FREE "MASONRY BIT SELECTOR GUIDE"

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City.....State.....

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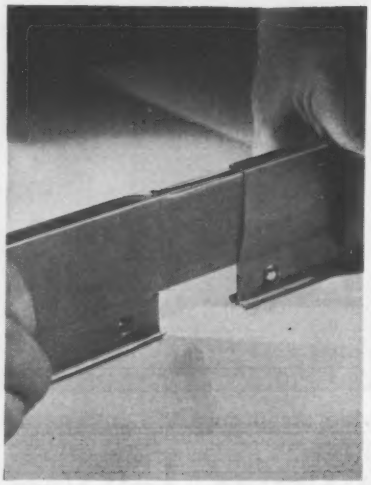


JOINING longitudinal strips is easy because deformed end permits interlocking.

highways in Maryland, North Carolina, Georgia, and Florida. They have also been used in test sections of airport pavements in several divisions of the Corps of Engineers, and on U. S. Naval Air Stations. They are included in the specifications for the $100 million Chantilly Airport and for future work on O'Hare International Airport in Chicago. MIDDLESTADT ENGINEERING, INC., 4322 YORK ROAD, BALTIMORE 12, MD.

Surfacing Roller Made For Caterpillar Graders

An improved road surfacing roller attachment is made for Caterpillar No. 12 and No. 112 motor graders. Called the Graderroller, it can exert up to 225 lb of compaction pressure per linear inch over its 42-in. roll width.

The roller is pivoted at the center to match the roller angle of operation to the road slope. The 2,000-lb unit has spring-tensioned scraper blades and a 35-gal automatic sprinkler system. MARTIN CO., KEWANEE, ILL.

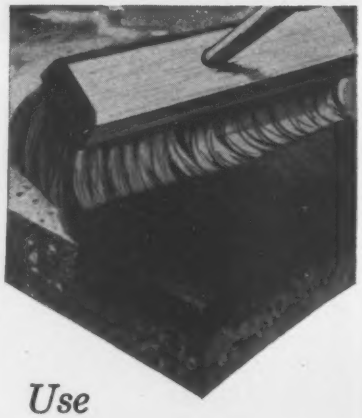
Flashing Warning Light Uses Kerosene as Fuel

Operating for about 50 hours on ½ pint of kerosene, the "Rhewum-Blitz" warning light produces 50 to 60 evenly spaced flashes per minute, says the manufacturer.

It is of durable construction, and designed to operate under severe weather conditions.

The light is priced at $9.00 fob Chicago. Repairs require no special tools or training. Available with red or amber cover glass. W. W. LEE AND SON, 20 E. JACKSON BLVD., CHICAGO 4, ILL.

(*New Products continued p. 58*)



Use

HORNOLITH

it's the **EASIEST**

way to make a concrete floor harder

Hornolith gives unpainted concrete floors flint-like surfaces that resist dusting, abrasion and the deteriorating effects of moisture, chemicals and oils. Hornolith's powerful wetting agents actually reduce the concrete's surface tension, enabling Hornolith chemicals to penetrate and saturate. It complies with Federal Job Specification for magnesium and zinc fluosilicate floor hardeners. A chemical reaction binds the fine sand and cement particles into a tight mass. One gallon covers approximately 100 sq. ft.

For details on Hornolith and the complete line of Horn floor hardeners, write Dept. ENR-46.

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SCREEDING *PLUS* PLANNING SPEEDS FLOOR FINISHING AT NEW I.B.M. OWEGO PLANT

Screeding 2-inch slump concrete with a STOW 25-foot vibrating screed.

Two STOW G46 Roto-Trowels follow the screeds to get final finish.

OWEGO, N. Y. Crow-Smith, contractors on the new $12,000,000 International Business Machines Corporation plant in Owego, N. Y., engineered the 175,000 sq. ft. manufacturing plant right down to the numbers, types and sizes of paving equipment to be used. Two 25-ft. Stow vibrating screeds were used to strike off the concrete. The floors were laid out in 25-ft. lanes, so that the same screed beam length could be used throughout the plant.

Crow-Smith saved considerable time by using a vibrating screed of this length, both in the actual screeding operation and in putting in the forms.

After screeding the 2-inch slump concrete, Crow-Smith used two Stow 46-inch Roto-Trowels to do the floating and finishing job.

Experience has proved that Stow screeds cut production time almost in half. Also, they strike off *stiff* concrete smooth and true to grade and vibrate it at the same time.

Stow offers quick delivery; screeds can be shipped within three days of receipt of order. Stow screeds are available complete, cut to any desired length, or the Stow package assembly without beam, consisting of 2½ HP vibrating unit, brackets for engine mounting, end rollers, handles and all necessary bolts.

For more information on Stow screeds, write—

STOW MANUFACTURING CO. Dept. B-2, 19 SHEAR ST., BINGHAMTON, N. Y.

Lima Roadpacker compacts gravel base, from bottom up by vibration, on Michigan highway job.

LIMA Roadpacker gives better compaction in fewer passes to cut costs for contractor

"It's a real timesaver, our Lima Roadpacker," says Vice President Jerry Gooding of O. E. Gooding & Co., Ypsilanti, Mich. "It's fast . . . gives us better compaction in fewer passes than would be required with other compaction equipment."

Variable widths, deep compaction

"We like the Roadpacker's ability to compact in varying widths with either 4, 5 or 6 shoes. We couldn't do this with the compaction equipment we had before.

"Vibration from those shoes really penetrates to do an efficient compaction job for us. We often get required 100 per cent density in one pass. In most cases, including sand, not over two passes are required."

Highway travel without permit

"The Roadpacker moves about the job, or from job to job, under its own power. That's an important saving in trailer rental costs and time alone. The shoes can be raised hydraulically. Operator can fold back end shoes in a few minutes for highway travel. Travel speeds up to 30 mph!"

Learn how you can cut your compaction costs by using the Lima Roadpacker for efficient high-density compaction. Lay fewer courses . . . compact up to 10 and 12-in. layers in fewer passes . . . compact in reverse as well as forward to end time-wasting deadhead backups. Get all the facts on the Lima Roadpacker—see your local Lima distributor or write us for free bulletin today.

Widener attachment — Vibrating shoes compact material in widening trench while Roadpacker runs on existing pavement. Easily adjusted for various width trenches. Ends need for expense of special trench roller.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

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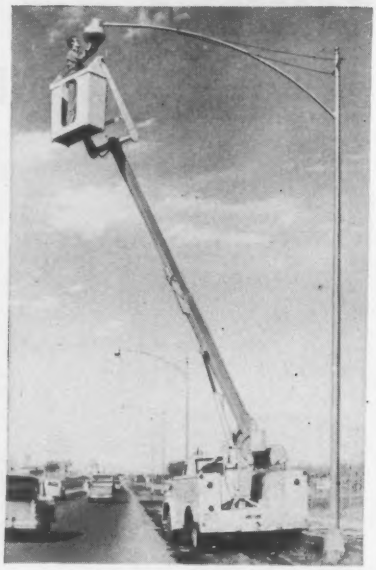


Aerial Lift to 100 Feet Sits on Standard Truck

A completely hydraulically operated aerial lift can be mounted on a standard truck chassis. It's operated either from a separate engine or a power take-off on the truck engine.

A telescoping boom can place the worker up to heights of 100 ft. The two-man basket is of glass fiber. Rated capacity is 500 lb.

The lift can be rotated 360 deg and raised 75 deg from the horizontal. Outriggers are supplied for added stability. Truck Equipment Co., 3963 Walnut St., Denver 5, Colo.

Air Blower Is Teamed With Rotary Power Broom

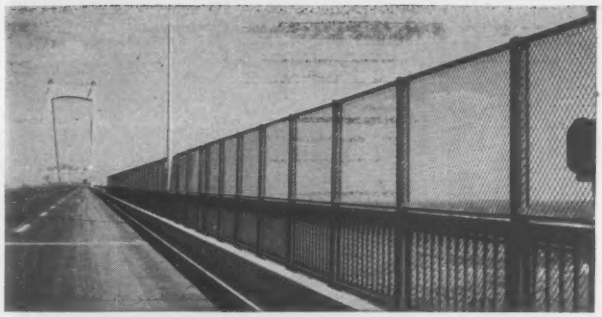
A built-in blower is featured in the self-propelled power broom, the Broom Master. The blower throws a broom-wide air stream to help the rotating broom clean the road surface.

A 240-gal water tank is built into the tractor. An 8-ft moldboard blade is an attachment. Flaherty Mfg., Inc., P.O. Box 1042, Pocatello, Idaho.

Shop Fume Exhaust Unit Uses Compressed Air Only

Ordinary compressed air from the shop line is all that's needed in a new unit for exhausting fumes from an enclosed working space. It is a small cylindrical unit with a venturi. The compressed air stream in the throat draws out welding fumes, smoke and hot air from tight work areas.

The "Air Mover" exhaust unit has no moving parts. Arcair Co., Box 431, Lancaster, Ohio.



Aluminum fencing leads to lower ultimate cost

Chain Link Fencing of Alcoa Aluminum Makes the Dollar Difference

Year after year of exposure to corrosive atmospheres does not impair the looks or usefulness of chain link fencing of Alcoa® Aluminum. Installations made over 30 years ago prove it's the maintenance-free fence that never requires a protective coat of any kind, ages to a pleasing soft gray.

Aluminum fencing imposes no restrictions on landscaping, allowing for permanent adjacent planting without the worries of access for upkeep and spraying. The cost of aluminum for right of ways, around toll-road entrances, down divider strips, diminishes with each year of maintenance-free service.

Check these other advantages you get with Alcoa Aluminum:

High Strength—Average tensile strength of Alcoa's new alloy is 57,500 psi.

Easy Erection—Light weight means less labor.

Readily Available—Reliable manufacturers and erectors in 48 states. Contact your nearest Alcoa sales office.

For your copy of 12-page illustrated booklet and a summary of recently bid prices on 4-ft-high and 6-ft-high all-aluminum fencing, write to Aluminum Company of America, 2056-D Alcoa Building, Pittsburgh 19, Pa.

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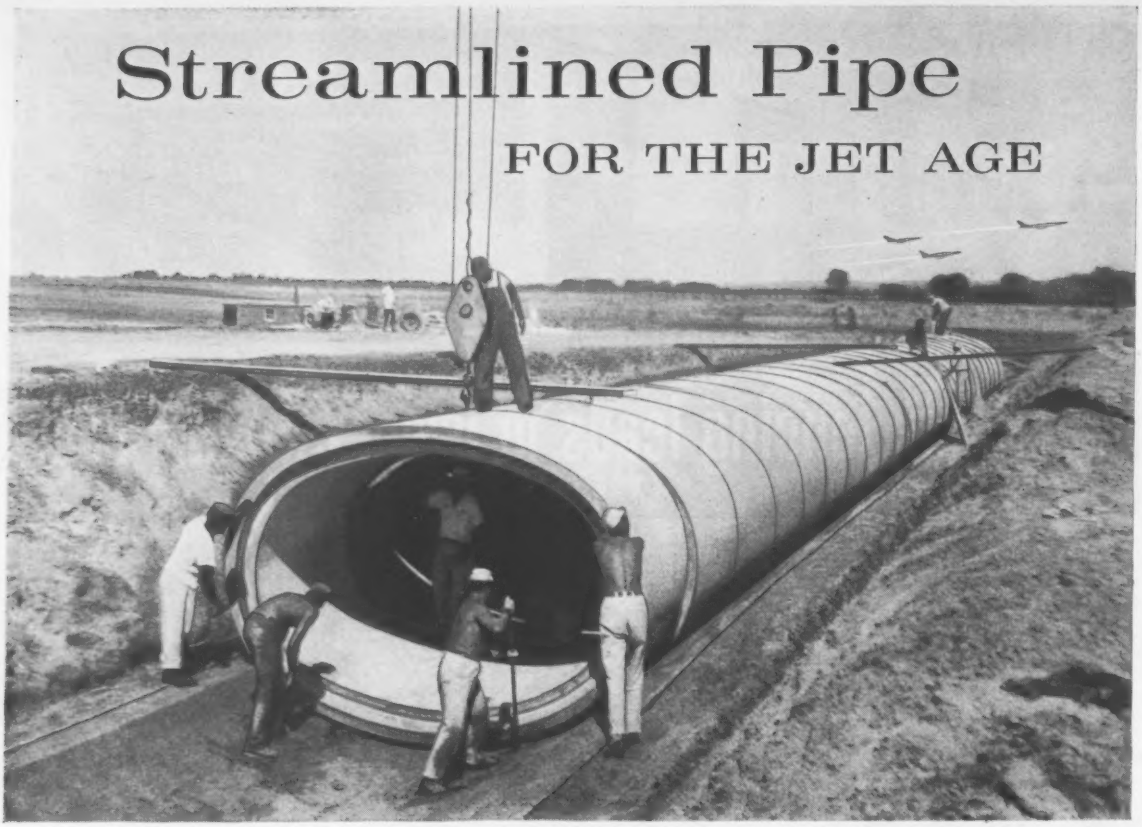
Your Guide to the Best in Aluminum Value

For Exciting Drama Watch "Alcoa Theatre," Alternate Mondays, NBC-TV, and "Alcoa Presents," Every Tuesday, ABC-TV

Streamlined Pipe

FOR THE JET AGE



108 inch Lo-Hed being installed at Offutt Air Base, Nebraska, jet headquarters for the U.S. Strategic Air Command.

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REINFORCED CONCRETE PIPE

Jet airfields require special drainage pipe with features only Lo-Hed can provide. The elliptical shape permits a minimum depth of cover on minimum slopes under vast jet airfields. Also, Lo-Hed will not deflect even under tremendous loads . . . has a smooth, non-inflammable interior . . . assures greater capacity than equivalent size of round pipe.

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East Coast Constructors Elect MacLean President

Mansell L. MacLean, president of MacLean-Grove & Co., Inc., New York City, has been elected president of The Moles, East Coast association of heavy construction engineers and executives. He succeeds Howard A. Collins, president of Howard Collins Construction Co., Inc.

Other officers elected were Chester W. Cambell of The Foundation Co., first vice president; Henry T. Immerman of Spencer, White & Prentis, second vice president; Eugene G. Rau of J. Rich Steers, Inc., treasurer; Eugene F. Moran, Jr. of Moran Towing Corp., secretary, and Robert S. Mayo of Mayo Tunnel & Mine Equipment Co., sergeant-at-arms.

Mr. MacLean has been in heavy construction since 1924. Prior to 1951 he was associated with Samuel R. Rosoff in the construction of subways.

British Columbia Fills Power Commission Roster

Four new appointees have been named to British Columbia's power commission. The personnel changes occurred in the wake of charges by the former general manager of the commission that Premier Bennett was "juggling commission finances" to advance his debt-clearing program.

Hugh Keenleyside was named chairman of the power commission and adviser to the government on Columbia River power development. Also appointed are Arthur Lee, a Vancouver engineer; Frederick A. Smith, an Edmonton accountant; Minister of Mines. Kenneth Kiernan; and Lands and Forests Minister Ray Williston.

Careers

Public Works

James V. Musick has resigned as chief traffic engineer of Columbus to become head of the Bureau of Traffic of the Ohio Department of Highways.

Winton Blount, president of Blount Brothers Construction Co., Montgomery, has been appointed chairman of the Alabama State Licensing Board for Contractors.

G. A. Zellers has been named superintendent of state highways for Columbiana County, Ohio.

Clifford Pace, city manager of Asheboro, N. C., since 1950, has been named city manager of New Bern, N. C. He succeeds C. L. Barnhardt, who resigned recently to become city manager of Jacksonville, N. C.

Earl L. Sheley has been named Division 6 engineer of the Ohio Department of Highways. He had been assigned to the department's planning and programming division.

George W. Boulter has joined the Montana State Highway Commission as departmental safety engineer.

P. Greer Johnson, city engineer of Asheville, N. C., has been appointed a member of the North Carolina State Stream Sanitation Committee, succeeding Walter Clark. He will serve as municipal government representative on the committee.

Hugh L. Medford, director of public works for the City of Greensboro, N. C., has been elected president of the North Carolina chapter of the American Public Works Association.

A. M. Luce has been appointed general superintendent of maintenance for the St. Lawrence Seaway Authority, Ottawa.

Col. Gerald P. McCarthy will retire in November from his post as district engineer of the U. S. Army Corps of Engineers in Tullahoma, Tenn. He will be succeeded by Lt. Col. William C. Langley, now stationed in Washington.

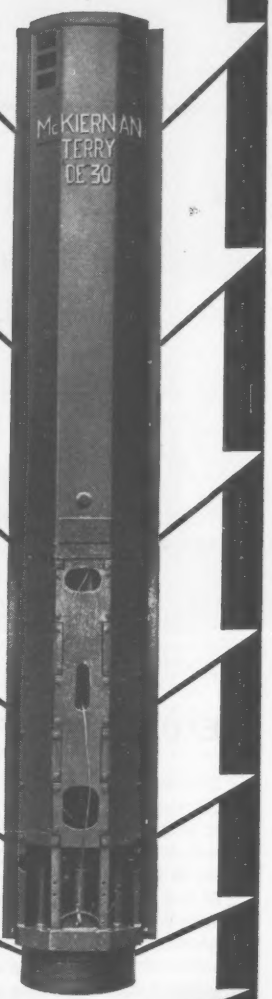
Associations

Edward P. Albright has been named president of Franki Foundation Co. the U. S. affiliate of Societe des Pieux Franki, Liege, Belgium, engineers and contractors for foundation work throughout the world. Mr. Albright has been previously associated with MacLean-Grove & Co., Inc., and Underpinning & Foundation Co., Inc.

Sol J. Wittenberg, city water commissioner of Toledo, has been elected chairman of the Northwestern Ohio Section, American Water Works Assn.

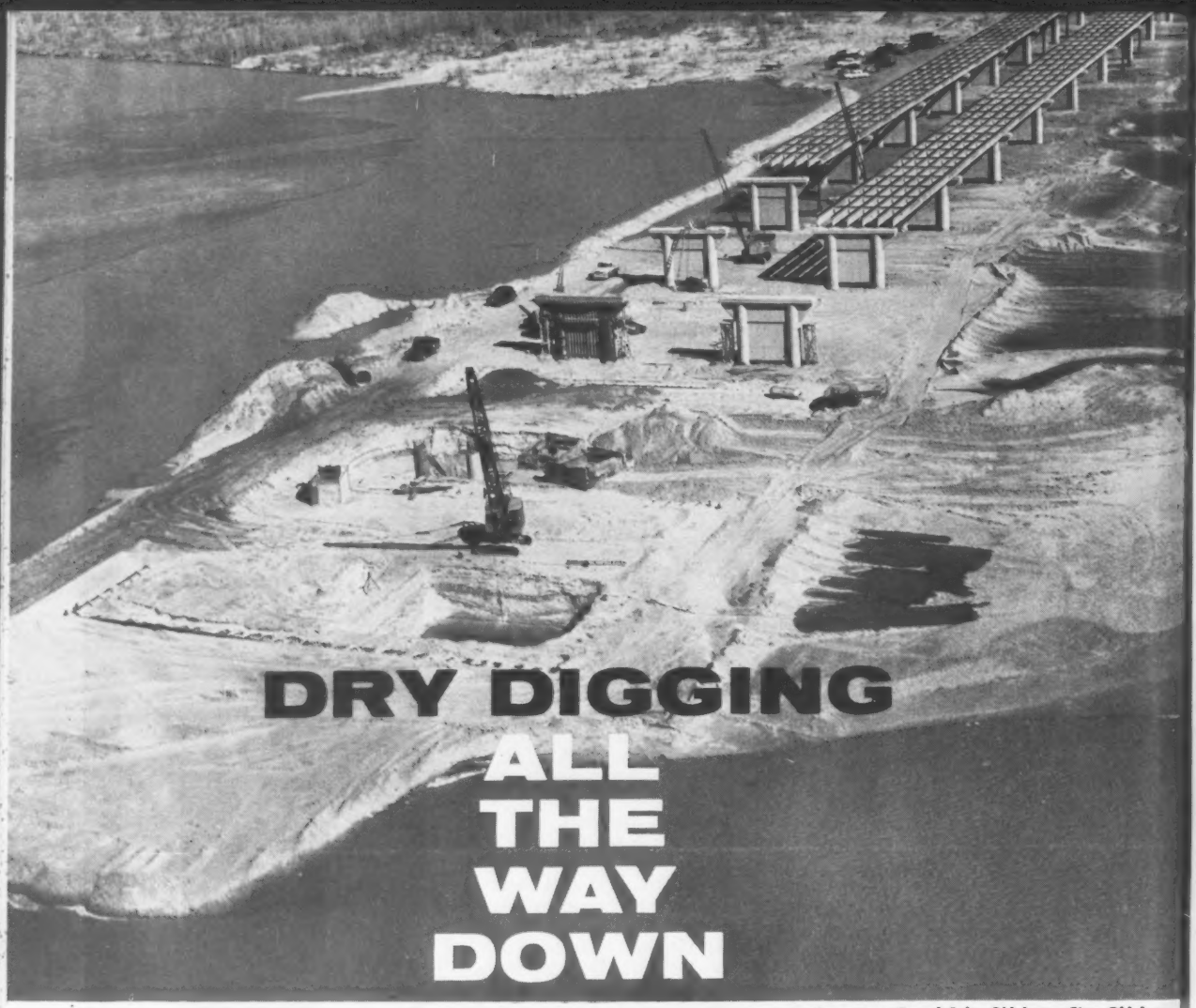
DIESEL PILE HAMMERS

are self contained — no steam — no air — a small quantity of fuel oil for all-day operation — high driving rate — simple design — easy to maintain — write for Bulletin 67R.



McK T

McKIERNAN-TERRY CORP.
80 RICHARDS AVE., DOVER, N. J.



DRY DIGGING ALL THE WAY DOWN

Contractor: Duard Pyle, Oklahoma City, Oklahoma
Cecil Williams, Supt.

STANG SINGLE STAGE WELLPOINT SYSTEM SPEEDS EXCAVATION THROUGH COMPLETE GROUND WATER CONTROL

Excavating for these riverbed bridge piers required efficient, accurate water control. The method chosen to accomplish this had to be sufficiently effective to dewater 24' to subgrade, yet flexible enough to move on to the next landing as the piers were placed. At the request of the contractor, engineers of the John W. Stang Corporation analyzed the problem and promptly recommended wellpointing as the best solution. Why a wellpoint system? Because it afforded pinpoint accuracy in the area being dewatered, it did not inhibit the excavating with shoring, braces or equipment in the hole, and it was economical and reliable to operate.

The successful handling of difficult water problems is Stang's sole business. Stang engineers are water-handling specialists, well-qualified to prescribe the most efficient and economical solution to job site water problems of all types. The next time you have a water problem, consult the Stang office nearest you. You'll save time and money when you do.

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Engineers and Manufacturers of Dewatering Equipment,
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Obituaries

Gerard Hendrik Matthes, Flood Control Expert

Gerard Hendrik Matthes, a specialist in flood control and aerial surveying died in New York.

Mr. Matthes is credited with making the War Department's first aerial survey of rivers. The job was undertaken in 1920 on the Tennessee River.

He is also credited with inventing tetrahedral block revetments for river banks, and an automatically controlled aerial camera.

An outstanding civil engineer, Mr. Matthes won the Norman Gold Medal of the American Society of Civil Engineers in 1949.

Thomas A. Johnston, Jr., retired officer in the Army Corps of Engineers. His last post was director of hydropower work in the Mobile district.

Edward C. Davis, Sr., 74, former partner in the St. Louis engineering firm of Frazier-Davis. A hydraulic engineer, Mr. Davis had a hand in designing the Delaware Tunnel for New York City's water supply.

Harry Shullo, Sr., founder and boar.! chairman of Shullo Construction Co., Akron. The company, which builds sewers and water and gas lines, worked on the Pennsylvania and Ohio Turnpikes.

Horace B. Deal, 76, president and founder of H. B. Deal & Co., Inc., general contractors of St. Louis. His firm built many of the major buildings in St. Louis and neighboring areas.

Frank Maloney, 67, a general contractor in Sacramento, Calif.

Charles M. Jones, 64, a vice president of John A. Roebling Sons Corp., Trenton, N. J. A graduate of the U. S. Naval Academy and Massachusetts Institute of Technology, he joined the company in 1926 as assistant chief engineer in the bridge division. He was active in supervising the design and erection of the George Washington and Golden Gate Bridges.

Frank E. Harley, 66, an engineer for Franklin Lakes and Saddle River Borough, N. J., and consultant for Morris County, N. J. He was at one time civil engineer for 17 townships and boroughs in Bergen County, N. J.

Frank M. Evans, 71, borough engineer for Glen Rock, N. J. for 43 years.

Remington Stud Driver

The basic Power Unit...

Here's the single basic tool that gives you a new degree of on-the-job fastening versatility. Only *one* basic unit to buy—the Remington Model 455A—for all your fastening applications. Just choose the instantly interchangeable fastening attachment you need to do the job!

Plus choice of 4 fastening attachments...

K-1 1/4" & 3/8" Light-Duty Captive Stud Attachment uses 22 cal. Power Loads. Use where extra safety is needed.

K-2 1/4" Light-Duty Attachment uses 22 cal. Power Loads. Handles 80% of your fastening jobs.

K-3 3/8" Medium-Duty Attachment drives heavy-duty studs with inexpensive 22 cal. Power Loads.

K-4 3/8" Medium and Heavy-Duty Attachment. Uses both 22 and 32 cal. Power Loads. For toughest jobs.

offers greatest single-tool fastening versatility!

The Remington Stud Driver offers these exclusive features:

- Four fastening attachments for light, medium, heavy-duty work, including the special Captive Stud Attachment for extra-safe fastening. No other single tool can cover such a variety of applications.
- Medium-duty fastening—requiring ⅜" studs—can be done with low-cost 22 caliber Power Loads.
- Positive one or two-hand operation at operator's option . . . no buttons or release to hold while fastening.
- Greater variety of applications made possible with instantly interchangeable guards. These 4" square, hollow "safety guards" fit snugly over work, trap spall and dust. More than 40 types are available.

Send coupon for free booklet about the Remington Stud Driver—your best buy in powder-actuated fastening tools!

CHOOSE THE POWER MOST EFFICIENT FOR YOU. REMINGTON POWER TOOLS ARE AVAILABLE IN AIR • ELECTRIC • GASOLINE AND POWDER-ACTUATED MODELS

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IN CANADA: Remington Arms of Canada Limited, 36 Queen Elizabeth Blvd., Toronto 18, Ont.

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Please send—without obligation—catalogs on Remington Contractor & Industrial Tools checked below:

☐ Stud Drivers ☐ Air Tools ☐ Chain Saws
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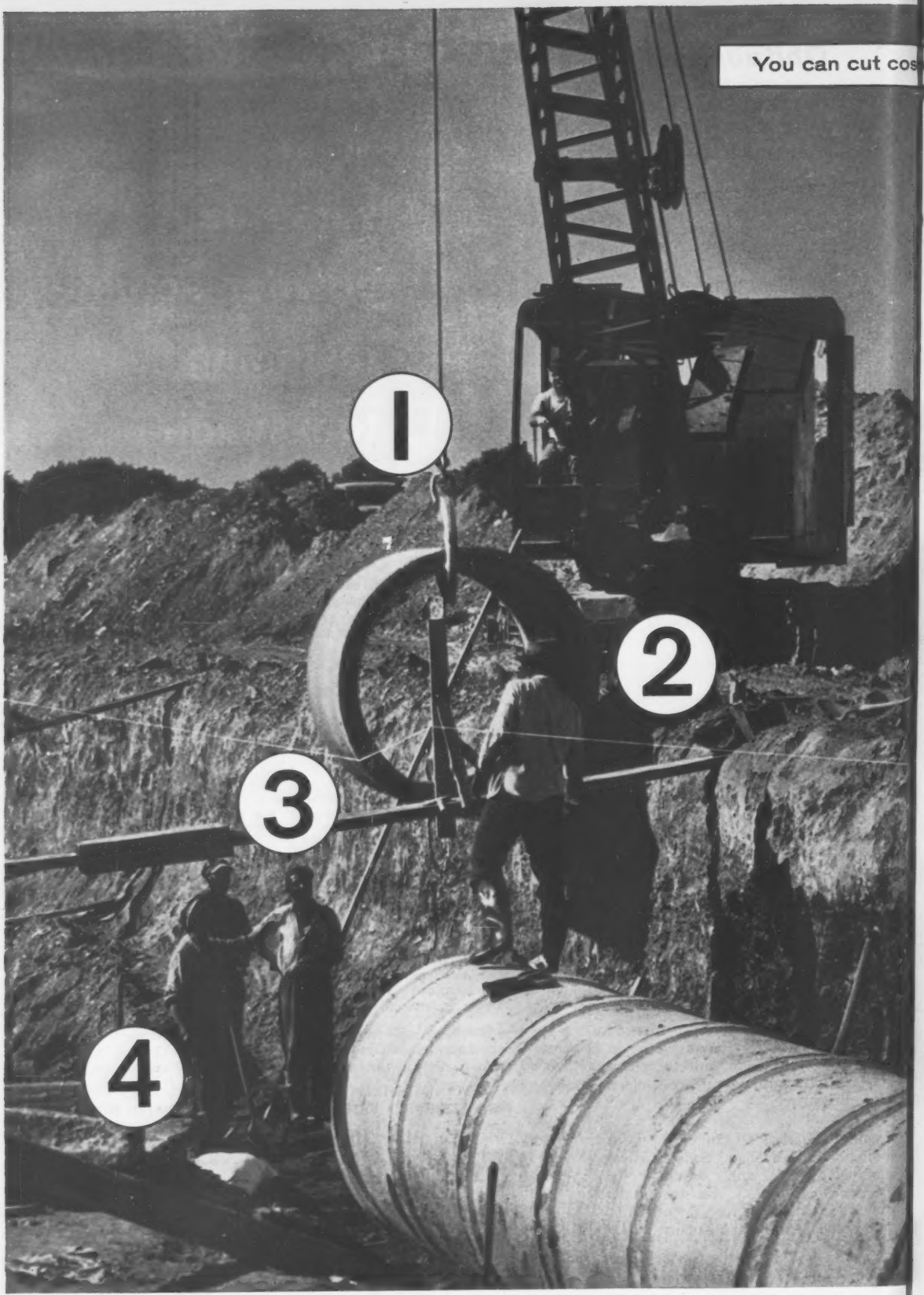

You can cut cos with ex

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ut cos with expert insurance and safety counsel from American Mutual men

Just laying pipe— but it could lead to costly accidents if...

1. Crane cable snapped
2. Crane toppled into trench
3. Trench wall collapsed
4. Load hits men in trench

For most contractors, laying pipe is a commonplace operation. And because of the routine nature of this job, potential hazards to life and limb—and profits—are easily overlooked!

For this reason, alert contractors welcome the wide experience of American Mutual Safety Engineers to help keep accidents to a minimum on *all* types of operations—routine or otherwise. With the contractor and his job superintendent the AM Safety Engineer endeavors to spot potential danger points and outline safety measures to protect workers.

If an accident should occur, AM men handle the case promptly, fairly, and without fuss—and get the injured employee back on the job in the shortest possible time.

All this adds up to fewer accidents and work stoppages. In dollars, it means you pay less for workmen's compensation insurance, reducing your overall labor costs and enabling you to enter lower bids. So, before you make your next bid, call on the *friendly* AM *man*. He can advise you on all your casualty insurance needs and help save you money in the process! American Mutual Liability Insurance Co., Dept. EN-3, Wakefield, Mass.

"The First American Liability Insurance Company"... a leading writer of Workmen's Compensation, all forms of Liability, Crime, Accident and Health Insurance.

American Mutual

LIABILITY INSURANCE COMPANY

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FAST
Call LaBarge!

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Men who order pipe know it for a fact... that, time after time, LaBarge comes through with amazing speed on rush orders, orders filled from a complete stock of ⅛" to 36" O.D. quality steel pipe in a full range of weights and wall thicknesses. EXAMPLE: An order in the morning for two big carloads was on its way by 4 P.M. the same day... at jobsite 1000 miles away within 72 hours.

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We offer *complete* service... cutting, threading, grooving, welding, coating, sand-blasting, wrapping, light fabrication... and a fine line of valves, welding fittings and flanges.

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Sewage Treatment Plant for Westerly, R.I.

A 2-mgd primary sewage plant has been contracted for by the city of Westerly, R. I., at a cost of $467,895. The award to R. Zoppo Co., Inc., Norwood, Mass., by the Board of Water Commissioners, was on a bid 6.2% under the engineer's estimate, but only $312 below the second of eleven bids. Fay, Spofford & Thorndike, Inc., Boston, is the consultant.

Work includes furnishing and installing two 8-in., 60 HP pumps at the main sewage station and equipment for two 50-ft-dia primary settling tanks, along with various structures, electrical work, piping, heating and ventilating and related work.

Class A and B concrete must attain a compressive strength of 3,000 psi, and Class C, 2,000 psi. in 28 days. Cast iron pipe is Class 150.

Prevailing wages include: tractor operator $3.025; crane & shovel operator $3.70; concrete finisher $3.50; common laborer $2.30.

The bidding included:

1C R. Zoppo, Inc., Norwood, Mass.	$467,895
2 Vanguard Constr. Co., New York City	468,207
11 C. H. Nickerson Co., Inc., Torrington, Conn.	567,626
EE Fay, Spofford & Thorndike, Inc., Boston	498,950

Bids: 2-11-59 Items	Unit	Quantity	Unit Prices 1C	2
Main sewage pump station improvements	ls	Job	$14,600	$18,200
sluice gate & hyd contr.f&i	ls	Job	2,500	3,500
barminutor f&i	ls	Job	4,800	5,300
2—8" 60 HP pumps, controls & appurt f&i	ls	Job	23,800	24,000
electrical system f&i	ls	Job	11,000	10,000
pipe, vlvs, fttgs, sump pump & meter equipment f&i	ls	Job	12,100	13,000
overfl MH, bypass, pipe, hdwall & ovfl chan, exist pump sta	ls	Job	5,475	6,000
Grit remov chamber struct, pipe, aeration equip, grit pump & appurt f&i	ls	Job	9,800	5,500
Primary settling tanks & pipe gallery structs	ls	Job	7,200	9,000
Equip in 2—50' ϕ. primary settling tanks f&i	ls	Job	59,800	42,000
Set tanks & pipe gall sew pipe, sludge pump equip, bilge pump, scum pipe & all appurtenances.f&i	ls	Job	20,300	18,000
electrical work	ls	Job	17,200	22,000
Sludge digest tanks & oper & contr bldg structs	ls	Job	1,900	3,000
Float covers & appurt for sludge digest tanks f&i	ls	Job	90,000	70,000
Digest htg equip, recirc pump units, sludge pipe & appurt in digest tanks & oper & contr bldg f&i	ls	Job	26,600	27,000
Elec wk at oper & contr bldg	ls	Job	28,100	36,000
Ht & vent facil in oper & contr bldg f&i	ls	Job	8,000	9,000
Plmb facil, oper & contr bldg & pipe gall f&i	ls	Job	3,000	4,500
Gas equip & appurt for sludge mixing f&i	ls	Job	9,700	9,700
Chlorinator, scale, pipe & appurtenances f&i	ls	Job	8,900	8,000
Lab & off equip & appurt.f&i	ls	Job	6,700	6,500
Sewage treatment works electric work in yard	ls	Job	1,400	3,200
undergr pipe, vlvs & appurtenances f&i	ls	Job	2,540	3,000
Sludge drying beds	ls	Job	19,000	33,000
Subaqueous outfall sewer & outlet structure	ls	Job	27,000	24,000
CI water main, 6", B&S	lf	900	11,300	21,000
Gate valves & boxes, 6"	ea	2	4.00	5.00
Fire hydrant	ea	1	125.00	100.00
			280.00	240.00
CI fittings, additional	lb	2,000	$0.45	$0.28
Excavation, earth	cy	700	0.50	1.00
Borrow, gravel	cy	3,000	0.50	1.20
Bit mac pavement in street	sy	50	4.00	3.20
Paving appr rd, drwy & walks at sewage treatment works	sy	4,200	2.25	1.45
Sewage treatment works site				
clear & grub	ls	Job	400.00	1,500
loam & seed	sy	5,700	0.50	0.30
Imhof tank, demolish exist.	ls	Job	1,200	1,000
Excavation, rock	cy	20	15.00	30.00
earth, misc & extra	cy	100	5.00	1.50
below grade	cy	100	5.00	3.00
Select material	cy	100	2.00	3.00
Shtg & lumber left in place	Mfbm	5	160.00	60.00
Underdrain, 6"	lf	200	2.00	2.00
Concrete masonry, class A	cy	10	90.00	60.00
class B	cy	10	80.00	55.00
class C	cy	10	70.00	30.00
Reinforcing steel	lb	500	0.20	0.15
Brick masonry	cy	10	90.00	95.00
Site prep & misc work	ls	Job	3,500	5,622
Bond	ls	Job	4,600	3,400

Commence: 3-23-59 Completion schedule: 400 cal days
Liquidated damages: $100/day

California Water Main Bid Is 36% Below Estimate

Over 86% of this $205,124 contract to Ernest C. Collins Co., Compton, Cal. for additional distribution mains for the Long Beach Water Dept. goes for 24-in.-dia, steel cylinder concrete pipe, 10,192 lin ft at $16.93 and 303 lin ft at $15.57 a ft.

Other prices on the pipe ranged from $16.50 to $32 a ft. The award is 36% below the engineer's estimate. The Long Beach Water Dept. engineering staff is the engineer.

The work includes three 24-in. H.E. gate valves; six 12-in. flanged gate valves; five 12-in., two 10-in. and four 8-in. tapping sleeves and gate valves; six fire hydrant assemblies and nine connections to existing mains.

Minimum wages include: tractor operator $3.81; crane and shovel operator $3.81; common laborer $2.68.

1C Ernest C. Collins, Co., Compton, Cal	$205,124
2 Krieg Constr. Co	213,211
15 S/E Pipeline	287,316
EE Long Beach Water Dept.	321,200

Bids: 1-22-59 Items	Unit	Quantity	Unit Prices 1C	2
SCC water pipe, cip, 24" ID	lf	10 192	$16.93	$18.00
24" ID	lf	303	15.57	16.50
Stl water main, cip, 25¾" OD	lf	247	37.80	31.60
Connections to existing mains				
10" CI & 12" AC at Willow St	ls	Job	2,180	2,100
8" CI & 12" AC, alley north of Barbennelle	ls	Job	2,268	2,200
10" CI & 12" AC, at Spring St	ls	Job	2,940	2,600
8" CI, Pageantry St	ls	Job	2,275	2,300
Metz St	ls	Job	796.00	800.00
12" CI & 12" AC, Wardlow Rd	ls	Job	865.00	800.00
12" CI, Conant St	ls	Job	2,130	1,600
Anchor blox	cy	25	1,240	1,200
Laterals, case A remodel	ea	10	36.00	25.00
case B remodel	ea	5	95.00	100.00
Overexcavation	cy	200	115 00	150 00
Select material	cy	50	5 00	3.00
Welded field joints	ea	5	7 00	5.00
			10.00	25.00

cip Complete in place SCC Steel cylinder concrete
AC Asphalt concrete
Completion schedule: 120 cal days

Materials Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Clay Products, Lime, Plaster, Paint, Roofing: Last, Apr. 30: Next, May 28.
- Wage Rates, Building Board, Lath, Insulation: Last, Apr. 30: Next, May 28.
- Cement Aggregates, Ready-mixed Concrete, Asphalt: Last, May 7: Next, Jun. 4.
- Iron & Steel Products, Pipe: Last, May 14; Next, Jun. 11.

LUMBER, TIMBER, PLYWOOD—PER M FT., B. M., CARLOAD LOTS F. O. B.

SOUTHERN PINE AND DOUGLAS FIR

All Southern Pine is No. 2 common or better and for No. 1 N. C. Boz. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 20 ft. (Prices in italics)

	1x6 sds	1x8 sds	2x4 sds	2x6 sds	2x8 sds	2x10 sds	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta †f	$73.00	$76.00	$76.00	$79.00	$81.00	$86.00	$136.00	.....	.....
Baltimore o	95.00	100.00	102.00	102.00	102.00	107.00	119.00	.....	.....
	113.00g	*118.00g*	*128.00g*	*128.00g*	*128.00g*	*128.00g*	*148.00g*	*$165.00*	*$165.00*
Birmingham n†r	83.00	85.00	84.00	84.00	89.00	95.00	111.00	.....	.....
	80.00	*80.00*	*79.00*	*81.00*	*81.00*	*98.00*	*83.00*	*80.00*	*80.00*
Boston ns	100.00f	100.00f	110.00f	110.00f	110.00f	117.00a	.....	.....	.....
	104.00	*104.00*	*120.00*	*120.00*	*120.00*	*117.00*	*136.00*	*158.00*	*158.00*
Chicago **	125.00	128.00	122.00	136.00	144.00	145.00	140.00	.....	.....
	131.00	*131.00*	*144.00*	*142.00*	*142.00*	*143.00*	*151.00*	*151.00*	*151.00*
Cincinnati n*	102.50	103.75	96.50	98.00	104.75	112.75	121.00	.....	.....
	105.50	*107.75*	*110.75*	*111.50*	*110.50*	*127.50*	*136.25*	*136.25*	*136.25*
Cleveland o**	95.00	94.00	97.00	96.00	100.00	102.00	.....	.....	.....
	.....	.....	*111.00*	*113.00*	*117.00*	*120.00*	*132.00*	*132.00*	*132.00*
Dallas ‡R	78.00k	85.00k	80.00k	80.00k	78.00k	78.00k	125.00	.....	.....
Denver n*	*Not in stock*		*118.50*	*119.50*	*119.50*	*120.50*	*136.00*	*148.50*	*176.00*
Detroit ‡	138.00	140.50	138.00	136.00	143.50	143.50	.....	.....	.....
	142.25	*142.25*	*153.25*	*151.50*	*160.00*	*165.50*	*204.00*	*221.00*	*221.00*
Kansas City ts	125.00	125.00	135.00	137.50	140.00	150.00	.....	.....	.....
	125.00	*125.00*	*135.00*	*137.50*	*140.00*	*145.00*	*175.00*	*225.00*	*225.00*
Los Angeles xnu	*108.00*	*108.00*	*108.00*	*108.00*	*108.00*	*108.00*	*136.00*	*141.00*	*141.00*
Minneapolis os	*130.00m*	*130.00m*	*140.00*	*140.00*	*140.00*	*140.00*	*185.00*	*185.00*	*185.00*
Montreal *bpw	84.00a	90.00a	84.00a	84.00a	99.00a	125.00a	.....	.....	.....
	160.00	*160.00*	*160.00*	*160.00*	*160.00*	*160.00*	*170.00*	*170.00*	*170.00*
New Orleans †n	89.00	89.00	95.00	92.00	92.00	97.00	126.00	.....	.....
	118.00	*118.00*	*107.50*	*128.00*	*128.00*	*128.00*	*140.50*	*160.50*	*160.50*
New York t	116.00	117.00	131.00	126.00	125.00	130.00	245.00	.....	.....
	.....	.....	*134.00*	*129.00*	*129.00*	*132.00*	*171.00*	*171.00*	*171.00*
Philadelphia ‡n		Range from 112/132				117/137	117/137	.....	.....
		Range from 122/152				*127/157*	*137/167*	*170.00*	*170.00*
Pittsburgh nt	115.00	120.00	130.00	120.00	145.00	145.00	165.00	.....	.....
	140.00	*120.00*	*140.00m*	*160.00*	*155.00*	*160.00*	*220.00*	*200.00*	*200.00*
St. Louis lns	125.00	127.00	135.00d	135.00d	135.00e	140.00e	.....	.....	.....
	.....	.....	*145.00*	*145.00e*	*145.00e*	*147.00e*	*199.00e*	*199.00e*	*199.00*
San Francisco nz	*98.00*	*98.00*	*98.00*	*98.00*	*98.00*	*98.00*	*109.00*	*130.00*	*130.00*
Seattle n†	*68.00*	*78.00*	*80.00*	*80.00*	*80.00*	*82.00*	*90.00*	*95.00*	*95.00*
Toronto *	100.00a	105.00a	98.00a	95.00a	101.00	99.00a	110.00a	.....	.....
	115.00	*115.00*	*120.00*	*124.00*	*128.00*	*128.00*	*138.00*	*145.00*	*141.00*

	LONG LEAF Y. P. Merchantable grade up to 20 ft. 2x12 Rgh	LONG LEAF Y. P. Merchantable grade up to 20 ft. 12x12 Rgh	FIR PLYWOOD ⅝" Interior plyscored, C-D gr.	FIR PLYWOOD ¾" Ply-form grade*
Atlanta †f	$121.00	$156.00	$135.00	$216.00
Baltimore o	175.00	190.00	175.00	260.00
	.....	.....	.....	.....
Birmingham n†r	120.00	168.00	145.20	256.94
	.....	.....	185.00	235.00
Boston ns	.....	.....	.....	.....
Chicago **	168.00	168.00	176.50	288.50
Cincinnati n*	138.00	135.00	112.00f	220.00f
	.....	.....	.....	.....
Cleveland o**	.....	.....	139.00a	256.00a
Dallas ‡R	133.00	160.00	112.50ac	196.00ac
Denver n*	.....	.....	154.00	281.50
Detroit ‡	151.50	.....	180.00gc	310.00gc
	.....	.....	.....	.....
Kansas City ts	.....	.....	162.75	265.00
Los Angeles xnu	.....	.....	140.00	260 00
Minneapolis os	.....	.....	190.00	310.00
Montreal *bpw	120.00	120.00	119.25	225.95
	160.00	153.00	122.41	201.00
New Orleans †n	.....	.....	.....	.....
New York t	245.00	235.00	141.20a	255.60a
	.....	.....	.....	.....
Philadelphia ‡n	226/236	226/236	145.00h	260.00h
Pittsburgh nt	160.00	185.00	225.00	295.00
St. Louis lns	.....	.....	185.02achj	290.02achj
San Francisco nz	.....	.....	112.00h	215.00h
Seattle n†	.....	.....	125.00aeg	250.00aeg
Toronto *	98.00a	.....	245.00	319.00

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL.

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. *a Spruce. *b Federal tax exempt. add 8% mun. & prov. tax. *c 5M lots. *d 8, 10, & 12 ft. lengths. *e 8 to 16 ft. lengths. *f Hemlock *g No. 1 common. *j 8 ft. lengths. *k No. 3 common. *l Add 2% sales tax. *m Up to 16'; No. 3 western pine, *n Less 2% disc. 10 days *o Less 2% disc. 10th. *p Less 1% disc. 10 days. * q fir: $80.25 in truck lots, fob job or CL, f.o.b. city. *r for f.o.b. city price add $8 for pine, $35 for fir. *s asd trucklots 5/6 Mfbm. *t truckiots del. *u Retail LCL yard. *v Retail LCL, del. *w add 6% Mun. & Prov. tax. *x add 4% sales tax

* PLYWOOD (Plyform, oiled and edge sealed): Douglas fir, 4' x 8' panels, 5-ply sanded 2 sides, carload lots, delivered per 1000 sq. ft. surface. Seattle base price, interior, moisture resistance, ⅜", $196.00; ½", $216.00 Exterior, waterproof, ⅜" $200.00; ½", $220.00. *a Delivered. *b Price may increase this month. *c Truck lots. *d A-C exterior. *e LCL. *f less 1%, 5 days. *g less 2% for cash. *h less 2% disc, 10 days. *j add 2% sales tax.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS: Discounts from jobbers list, Feb. 1, 1950a Single or Double Strength A quality	WINDOW GLASS: Discounts from jobbers list, Feb. 1, 1950a Single or Double Strength B quality	EXPLOSIVES: Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 500 lb. lots*
Atlanta	78%cR	79%g	$0.2695
Baltimore	74%d	76%d	.2695
Birmingham	82%f	82%f	.2345
Boston	72+10%p	72+10%p	.2695
Chicago	72%	72%	2345
Cincinnati	74%	74%	.2695
Cleveland	74-2-10%	74-2-10%	.2695
Dallas	76%	76%	.2770
Denver	73.5%	73.5%	.2695
Detroit	74-10-10%	74-10-10%	.2695
Kansas City	76-10-10%	76-10-10%	.2695
Los Angeles	70%	76%e	.2690
Minneapolis	71-10%	71-10%	.2695
Montreal	40-10-5%bc	40-10-5%	23.20h
New Orleans	76%g	76%g	.2695
New York	79%l	79%l	.5030g
Philadelphia	76-10%n	76-10%n	.2695
Pittsburgh	72%	72%	.2695
St. Louis	72-10-10%mo	72-10-10%mo	.2695
San Francisco	60%	73%	.2695
Seattle	$8.85/11.55hiq	$6.41/8.67hjp	.2695
Toronto	7.10/10.65n	6.45/9.70n	.2695

Price of 40% Ammonia Gelatin is $0.15 per lb. higher than 40% in U. S.; $1.75 per 100 lbs. higher in Canada.

Glass: *a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b sales tax extra. *c 77% for single strength. *d From 6/15/52 list. *e 77% for double strength. *f Single strength; double strength, 83%. *g From 8/1/58 list. *h 8s/ds, 40-in. *i 20 boxes min. *j CL quantity. *k eff. 12/58. *l eff.10/15/58. *m less 2% disc, 10 days. *n less 1% disc, 10 days. *o add 2% sales tax. *p less 1% for cash. *q less 2% for cash

Explosives: * Cartridges of 1¼" diameter or over, in standard lengths. *g deliveries in certain areas must be by truck or by truck and boat, requiring extra charge. *h F.o.b. Beloeil (near Montreal), per 100 lb., lots under 2000#, wood cases, forcite, 40%. Forcite 60%, $23.80 in fiber cases: forcite 40%, $23.20; forcite 60%, $24.95.

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 30,000 lb. lots	10,000 lb. lots	2,000 lb. lots	200 lb. lots
Group 1*	$0.2695	$0.2195	$0.2545	$0.2695
Group 2†	.2170	.2270	.2620	.2770

* All areas except those in Group 2 and N. J. cities of Bayone, Hoboken, Jersey City, No. Bergen, Union City and Weehawken † Florida counties of Manatee, Hardee, Highlands, Okeechobee, St. Lucieand south thereof; Idaho; Maine; Montana; New Mexico counties of Catron, Socorro, Lincoln, De Baca, Roosevelt and south thereof; Texas counties of Bailey, Lamb, Hale, Floyd, Motley, Cottle, Hardeman, Foard, Knox, Haskell, Jones, Taylor, Coleman, McCulloch, San Saba, Burnet, Williamson, Milan, Robertson, Leon, Houston, Angelina, Nacogdoches, Shelby and south thereof.

PILES, TIES

PILES

Prices per linear foot, fir and pine, rough peeled, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area: pine under fifty feet based on freight from mid-South, over fifty feet, on freight from deep South.

Dimensions	Points	Length	By Rail Pine*§ R	By Rail Fir R
12" at butt	6-in.	30 to 39-ft.	$0.32a	....
12"—2-ft. from butt	6-in.	40 to 44-ft.	.69	....
12"—2-ft. from butt	6-in.	45 to 49-ft.	.73	....
12"—2-ft. from butt	6-in.	50 to 54-ft.	.77	....
12"—2-ft. from butt	6-in.	55 to 59-ft.	.81	....
14"—2-ft. from butt	6-in.	60 to 64-ft.	.87	....
14"—2-ft. from butt	6-in.	65 to 69-ft.	.92	....
14"—2-ft. from butt	6-in.	70 to 74-ft.	1.02	1.07
14"—2-ft. from butt	6-in.	75 to 79-ft.	1.07	1.07
14"—2-ft. from butt	5-in.	80 to 84-ft.	1.17	1.10
14"—2-ft. from butt	5-in.	85 to 89-ft.	1.27	1.15/1.20

* Pine piling over 99 feet available only in limited quantities. § ASTM Class B a, trucked in from N. J.

RAILWAY TIES

Prices f.o.b. per tie box carload! ots:		6" x 8" x 8' Untr.	6" x 8" x 8' Tr.	7" x 8" x 8'6" Untr.	7" x 8" x 8'6" Tr.
Birmingham*...	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak	.....	4.00a	.....	4.50a
New York	S. L. Sap Pine	2.50	4.00	3.00	5.00
	Mixed Oak	2.50	4.00	3.00	5.00
Philadelphia	Red Oak	2.85/4.05	4.40/4.60	3.20/3.40	4.40/4.60
St. Louis	Mixed Oak	2.65	3.40a	2.90h	3.75ah
San Francisco	Douglas Fir	2.72ef	3.84ef	3.64ef	5.05ca

Tr.—Treated; Untr.—Untreated. a Creosoted. c Empty cell. e Green f.o.b. cars. g 7 x 9 x 8' 6" * Add 75¢/tie freight charge to Birmingham. *h 7" x 9" x 9½"

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.11
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	31.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	2.65
Soda ash, 58%, in paper bags, per 100 lb. dense	1.90
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	2.05
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	21.20

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **Mass., Ashburnham and Westminster**—SCHOOL—BA 6/5—Towns Ashburnham and Westminster Regional School Dist., Oakmont, Regional Senior-Junior High School, Maple Ave., South Ashburnham. $1,750,000. Plans deposit $100. James A. Britton, 315 Federal St., Greenfield, archt. CD 2/20.

HEAVY CONSTRUCTION—LB & CA

† **Carlo Bianchi & Co., Inc.**, 24 Union St., Framingham, Mass., LB $635,560, est. $656,492, West Hill Dam, West River, CIVENG-19-016-59-38, Uxbridge, MASSACHUSETTS. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Bids May 5. CD 4/10.

Civitarese, Piatelli Constr. Corp., 139 Providence St., Hyde Park, Mass., CA $855,525, est. $900,000, trunk sewer Contr. No. 2, RANDOLPH, MASS. Town, South Main St., Randolph, Mass. Bids Apr. 30. CD 5/5, under LB.

BUILDINGS—LB & CA

▲ **City, Dpt. School Bldgs.**, 26 Norman St., Boston, Mass., rejected bids Mar. 20, MEMORIAL HIGH SCHOOL alterations, addns., Warren, Deckard and Townsend Sts., Roxbury, BOSTON, MASS. LB $1,430,046. CD 3/25, under LB.

Sewell & Smith Constr. Co., Irving Square, Framingham, Mass., CA $813,100, est. $800,000, Mendon-Upton HIGH SCHOOL, UPTON, MASS. Mendon and Upton Regional School Dist., Memorial School, Upton, Mass. Bids. Mar. 27. CD 4/2, under LB.

E. Turgeon Constr. Co., Inc., 42 Weybosset St., Providence, R. I., CA $540,000, est. $450,000, LABORATORY, WOODS HOLE, MASS. Marine Biological Laboratory, Woods Hole, Mass. Claverdon, Varney & Pike, 120 Tremont St., Boston, Mass., engrs. Bids Apr. 16. CD 4/10.

Joseph P. Flynn, 48 Custom House St., Providence, R. I., CA $702,422, OFFICE and GARAGE, PROVIDENCE, R. I. City, City Hall, Providence, R. I. Bids Apr. 28. CD 5/5, under LB.

L & M Builders, Meriden Rd., Waterbury, Conn., Owner Builds, $900,000, 90 HOUSES, Meriden Rd. near Morris Lane, WATERBURY, CONN.

Beaudoin & Milkie, Ellington Rd., South Windsor, Conn., Owner Builds, $756,000, 40 HOUSES, "Wolcott Estates" Elmfield St., WEST HARTFORD, CONN. CD 10/9.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **N. Y., Mineola**—BA 6/16—Dpt. P. Wks., Nassau Co., Old County Court House, 50 mi. sewers and 480 house connections in Lakeview and West Hempstead, Collection District No. 2. $4,440,000.

HEAVY CONSTRUCTION—LB & CA

▲ **W. L. Hailey & Co.**, 314 42nd Ave. N., Nashville, Tenn., CA $1,190,000, river intake, raw water pumping station and raw water line to treatment plant, LOCKPORT, N.Y. Niagara Co. Water Distr., Court House, Lockport, N.Y. Bids Apr. 2. Grand total $7,011,593. CD 4/6, under LB.

Scrufari Constr. Co., 3925 Hyde Park Ave., Niagara Falls, N.Y., CA $1,677,240, 12 m.g. treatment plant (Lockport, N.Y.).

Chas. F. Smith & Son, Kennett Square, Pa., CA $3,243,665, concrete pipe 36 mi. water supply mains (Lockport, N.Y.).

W. J. Irwin & Sons, Irwin Rd., Tonawanda, N.Y., CA $900,688, concrete and asbestos cement water supply mains. (Lockport, N.Y.).

Turbine Equipment Co., 1063 U.S. Hy. 22, Mountainside, N. J., CA $694,497, Contr. 46A, equipment and piping for sewage treatment plant, HACKENSACK, N. J. Bergen Co. Sewer Auth., Rm. 400, Admin. Bldg., Hackensack, N. J. Bids Mar. 5, CD 3/10, under LB.

BUILDINGS—LB & CA

▲ **Comet Constr. Co.**, 10-37 47th Rd., Long Island City, N.Y., CA Est. $1,000,000, 3 story SCHOOL and 2 story CONVENT for St. Mel's Church, 154 St. and 26 Ave., FLUSHING, N.Y. Diocesan Bldg. Office, 191 Joralemon St., Brooklyn 2, N.Y. Beatty & Berlenbach, 32 Court St., Brooklyn 2, N.Y., archts.

▲ **Laurence J. Rice Inc.**, 61-40 Maurice Ave., Maspeth, N.Y., CA Est. $1,000,000, Our Lady of Fatima CHURCH and RECTORY, JACKSON HEIGHTS, N.Y. Diocesan Bldg. Office, 191 Joralemon St., Brooklyn 2, N.Y. Beatty & Berlenbach, 32 Court St., Brooklyn 2, N.Y., archts. V. L. Faloticot & Assocs., 26 Court St., Brooklyn 2, N.Y., engrs. Bids Apr. 16.

▲ **W. J. Barney Corp.**, 101 Park Ave., New York 17, N.Y., CA Est. $2,500,000, DISTRIBUTION PLANT and OFFICE near New England Thruway, RYE, N.Y. Avon Products Inc., 30 Rockefeller Plaza, New York 10, N.Y. Shreve, Lamb & Harman, 11 West 44th St., New York 36, N.Y., archts.

Alvin Developments, Inc., 206 Somerset Rd., Norwood, N.J., Owner Builds, $650,000, 21 HOUSES, Terrace St., HASBROUCK HEIGHTS, N.J., Rudolph L. Novak, Rte. 46, Clifton, N.J., archt.

Millburn Constr. Corp., 4 Skyview Rd., Union, N. J., CA $500,000, 20 HOUSES, addnl. sect. of Riverside, Ridgewood Rd., MILLBURN, N. J. Herzog-Getter, 4 Skyview Rd., Union, N. J. Elizs K. Herzog, 258 Broadway, New York, N. Y., archt.

Gumina Bldg. & Constr. Co., 2013 Morris Ave., Union, N. J., LB $769,767 HIGH SCHOOL addn., MORRISTOWN, N. J. Bd. Educ., Morristown, N. J. Frederick A. Elsasser, 2013 Morris Ave., Union, N. J., archt. CD 6/6.

▲ **William Marlin**, Elberon, N. J., Separate Contracts, $1,500,000, 130 unit RESIDENTIAL DEVELOPMENT, TUCKERTON, N. J. Erwin Gerber, 1180 Raymond Blvd., Newark, N. J., archt.

▲ **Joseph Cook, Sandy Hill Rd.**, Chatham, N.J., Owner Builds, $1,750,000, sixty 2-family HOUSES, Vauxhall Rd., UNION, N.J., Stephen Potter, 410 Colonial Ave., Union, N.J., archt.

▲ **Nathan Kaplan**, P.O. Box 287, South River, N.J., Owner Builds, $1,650,000, 86 HOUSES, Colonial Gardens, Ford Ave., WOODBRIDGE, N.J., Irwin Gerber, 11 Commerce St., Newark, N.J., archt.

▲ **W. F. Sutter**, Nescopeck, Pa., LB $1,108,600. general constr. JUNIOR-SENIOR HIGH SCHOOL, CATASAUQUA, PA. Catasauqua Hanover Union School Dist. Auth., Catasauqua, Pa. Bids Apr. 16. CD 4/7.

J. Wayne Ortlys, Inc., 1010 Warrior Rd., Drexel Hill, Pa., Separate Contracts, $525,000, RESIDENTIAL DEVELOPMENT, Hermosa Lane, etc., HAVERTOWN, PA.

▲ **Bargain City, U.S.A.**, 2210 Walnut St., Phila., Pa., Separate Contracts, $1,000,000, MARKET STORE, DeKalb Pike, NORRISTOWN, PA. Sabatino & Fishman, 116 S. 19th St., Phila., Pa., archts.-engrs.

▲ **John McShain, Inc.**, 3501 Sinclair Lane, Baltimore 13, Md., CA $3,478,000, brick, concrete, steel Herring Run JUNIOR HIGH SCHOOL, BALTIMORE, MD. City, Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore 2, Md. Bids Apr. 29. CD 5/1, under LB.

▲ **Lawrence Constructing Co.**, 500 Woodbourne Ave., Baltimore, Md., LB $1,786,420 (6 bidders), PREPARATORY SCHOOL, TOWSON, MD. Notre Dame Preparatory School, 4701 N. Charles St., Baltimore, Md. Bids May 7. CD 5/7.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	West of Mississippi
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

▲ **John R. Volpe Constr. Co.**, 261 Constitution Ave. N.W., Wash., D.C., CA $1,619,875, HEADQUARTERS BLDG., 16 and 17 St. on "P" N.W., WASH., D.C., American Trucking Assoc. Inc., 1424 16 St. N.W., Wash., D.C. Bids Apr. 8. CD 5/5, under LB.

SOUTH

BUILDINGS—BA

† **Ky., Fort Knox**—HOUSING IMPRVS.—BA 5/27—U. S. A. Armor Center, Purchasing Branch, Fort Knox, alterations, remodeling 582 apartment units (Wherry Housing). A-11-15-014-59-142. $500,000. CD 7/22.

† **Ky., Fort Knox**—STORAGE STRUCTURES—BA 5/28—U.S.A. Armor Center, Purchasing Branch, Fort Knox, 942-one story 11 x 25 ft. storage structures for Wherry Housing, IFB AII-15-014-59-146. $700,000. CD 7/22.

S. C., Florence—SCHOOL—BA 6/9—Florence County School Dist. No. 1, Courthouse, county high school. $750,000. Plans deposit $50. Lewis & Dowis, Florence, archts. CD 10/15.

BUILDINGS—SLC

▲ **Va., Alexandria**—SHOPPING CENTER—Greenbelt Consumers Services, Inc., 121 Centerway Rd., Greenbelt, Md., soon lets contract, Penn Daw Shopping Center, Kings Hy., Rte. U.S. 1. $1,500,000. Hugh Johnson Assoc., Inc., 2000 P St. N.W., Wash., D. C., archt. CD 4/30.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—Commonwealth of Va., Dpt. Hys., 1221 E. Broad St., Richmond,

Bowers Constr. Co., Box 1706, Raleigh, N. C., CA $1,568,485, 8 bridges, Washington Circumferential Hy. Rte. 413, Contr. B-4. State Proj. 0413-029-002-B20, B21, B22, B23, B24, B25, B26, B27, Fed. Proj. I-213-1 (8), Fairfax Co. Bids Apr. 29. CD 5/4, under LB.

▲ **VIRGINIA**—Commonwealth of Va., Dpt. Hys., 1221 E. Broad St., Richmond,

Va.—Heckler Bros., Inc., Highland Springs, Va. and **Talbott-Marks Co., Inc.**, Box 308, Clarksville, Va., CA $3,096,910, 1.821 mi. 2 lanes 24 ft. and 36 ft. x 9 in. c. conc. beginning 1.163 mi. E. of Rte. 350 ending Rte. 617 (Black Lick Rd.) Rte. 413, Contr. C-2, State Proj. 0413-029-002, C2, B60, B61, B62, B63, B64, B57, Fed. Proj. I-495-1 (4), 01, Fairfax Co.;

Va.—Blythe Bros. Co., Inc., 2911 Hutchinson Ave., Charlotte, N. C., CA $1,686,846, 1.588 mi. 2 lanes 24 ft. x 7½ in. c. conc., bit. top and 3 bridges beginning 0.042 mi. S. of SCL Petersburg ending 1.624 mi. N. of SCL Petersburg (Conn. with Richmond-Petersburg Tpke.) Rte. 95 (401) State Proj. 0095-074-010; 0095-123-070-072, 074, Fed. Proj. I-IG-95 (1) (6) 50, Prince George Co. and City of Petersburg. Bids Apr. 29. CD 5/4, under LB.

▲ **WEST VIRGINIA**—State Road Comm., Charleston, Zone 5,

Agnew-Joseph Co., P.O. Box K, Ronceverte, W. Va., CA $1,570,617, dual structures, Guyandot River and C. & O. Railway near Barboursville, Proj. I-64-1(6) 17, Cabell Co. Bids April 21, awarded May 6. CD 4/24, under LB.

▲ **FLORIDA**—State Rd. Dpt., Tallahassee,

Smith Constr. Co. of Florida, Drawer 1831, Pensacola, Fla., CA $671,588, b. conc. surf. with binder course 7.215 mi. SR 95 (US 29) Job No. 48060-3203, Fed. Aid Proj. No. F-001-1(6), Escambia Co. Bids Feb. 25. CD 3/2, under LB.

Wiley N. Jackson Co., Box 1408, Roanoke, Va., CA $1,142,332, Type 1, b. conc. surf. course and binder course, one bridge, 4-lane 10½ in. and 8½ in. limerock base ST. 8 FAI Proj. No. I-10-5(16) 320, Job No. 27090-3403, Baker Co. Bids March 24, awarded May 4. CD 3/27, under LB.

FLORIDA—State Rd. Dpt., Tallahassee,

† **E. & I. Inc.**, 3000 W. State Rd., 84 Fort Lauderdale, Fla., LB $913,482, Canal 14 Section 1 and 3 and Structures 37A and 37B, Central and Southern Florida Flood Control Project, CIVENG-08-123-59-47, FLORIDA. U. S. Eng., Box 4970 Jacksonville 1, Fla. Bids May 6. CD 4/1.

† **United Enterprises, Inc.**, 2845 N. Roman St., New Orleans, La., LB $510,000, missile assemble bldg. Cape Canaveral Missile Test Annex, Patrick Air Force Base, ENG-08-123-59-62, COCOA, FLA. U. S. Eng., P. O. Box 4970, Jacksonville 1, Fla. Bids May 1. CD 4/17.

▲ **W. L. Hailey & Co.**, 314 42 Ave., Nashville, Tenn., LB $1,030,515, trunk sewers, Projects MES 15-5 and 4 Section B, JACKSONVILLE, FLA., City, City Hall, Jacksonville, Fla. Bids May 5. CD 4/15;

Ray D. Lowder, Inc., P. O. Box 1110, Albemarle, N. C. LB $842,729, trunk sewers, Projects, MES 15-5 and 4, Section C (Jacksonville, Fla.).

▲ **McDonough Constr. Co. of Florida**, 8247 S. Dixie Highway, Miami, Fla., CA $1,531,986, incinerator, Jefferson St. and Washington Ave., (Coconut Grove) MIAMI, FLA. City, City Hall, Dinner Key, Miami, Fla. Bids Feb. 4, awarded May 6. CD 3/10, under LB.

Harbert Constr. Corp., 2208 8 Ave. S., Birmingham, Ala., LB $524,588 est. $585,000, (10 bidders), sewage disposal plant, DOTHAN, ALA. City, City Hall, Dothan, Ala. Bids May 5. CD 4/15; **Coggin & Dearmont Co.**, Chipley, Fla., LB $210,258 (5 bidders) outfall sewer (Dothan, Ala.).

▲ **LOUISIANA**—State Hy. Dpt., Rm. 307, Hy. Office Bldg., Baton Rouge,

Miller & Son, Hwy. 90, Lake Charles, La., CA $2,466,637, grading, overpass structures 0.305 mi. Lake Charles Expressway, Rte. L-10, SP No. 740-00-13, FAP No. I-10-1(12)30, Calcasieu Parish. Bids Mar. 18, awarded Apr. 1. CD 3/23, under LB.

▲ **Walter P. Villere**, Box 10066, New Orleans, La., CA $2,854,260, Houma Navigation Canal, HOUMA, LA. Terrebonne Parish Police Jury, Court House Bldg., Houma, La. Bids Apr. 22. CD 4/30, under LB.

Foley Constr. Co., 5050 Orchard St., Cincinnati, O., CA $888,553, est. $1,000,000, grading, drainage Boone County Airport, Erlanger, COVINGTON, KY. Kenton County Airport Bd., Court St., Covington, Ky. Bids Apr. 22, awarded May 5. CD 4/28, under LB.

▲ **Louisville & Jefferson County Air Bd.**, Lee Terminal Standiford Field, Louisville, Ky., cancelled bids to have been opened May 20, Lee Terminal Standiford Field addns., parking, ramps, runway paving, LOUISVILLE, KY. $1,400,000. Arrasmith & Tyler, 509 Park Ave., Louisville, Ky., archts. Southern Eng. Co., 322 W. Jefferson St., Louisville 2, Ky., engrs. Will re-advertise. CD 5/5.

BUILDINGS—LB & CA

▲ **A. C. Samford, Inc.**, 630 S. Slappey Dr., Albany, Ga., LB $4,196,196, Anderson Memorial HOSPITAL addn., ANDERSON, S. C. Anderson County, Anderson, S. C. Bids May 5. CD 4/28.

A. B. Newton & Co., Vidalia, Ga., CA $593,829, Low Rent Housing Proj. No. Miss. 76-2E; 34 DWELLINGS and 1 COMMUNITY MANAGEMENT-MAINTENANCE BLDG., utilities, etc., COLUMBUS, MISS. City Housing Auth., City Hall, Columbus, Miss. Bids May 5. CD 4/27.

Buquet & LeBlanc, Inc., Box 549, Baton Rouge, La., CA $696,707, HIGH SCHOOL alterations, renovations, addns., BATON ROUGE, LA. East Baton Rouge Parish School Bd., Baton Rouge, La. Bids Apr. 21. CD 4/30, under LB.

▲† **D & L Constr. Co.**, c/o L. A. Payne, 13238 Sherman Way, North Hollywood, Calif., CA approx. $4,500,000, 300 HOUSING units, Chennault Air Force Base, Inv. No. IFB-16-605-59-37, LAKE CHARLES, LA. Base Procurement Office, Chennault Air Force Base, Lake Charles, La. Bids Apr. 15. CD 4/20, under LB.

▲† **W. S. Bellows Constr. Corp.**, Box 2132, Houston, Tex., LB $12,827,000, general contract (except elevator plant) U. S. POST OFFICE, NEW ORLEANS, LA. General Services Admin., 1114 Commerce St., Dallas 2, Tex. Favrot, Reed, Mathes & Bergman, Nola Bldg., New Orleans, La., Freret & Wolf, 630 Gravier St., New Orleans, La., and August Perez & Assoc., Audubon Bldg., New Orleans, La., archts. CD 3/25.

John M. Hemmer Constr. Co., 1020 Prospect St., Covington, Ky., CA $482,764, 1 story, 160 ft. x 198 ft. brick, concrete Cote Brilliante ELEMENTARY SCHOOL, NEWPORT, KY. Bd. Educ., 8th and Columbia St., Newport, Ky. Bids Apr. 21. CD 4/1.

MIDDLE WEST

BUILDINGS—BA

Wis., Princeton—SCHOOL—BA 5/27—Bd. Educ., high school. $500,000. Plans deposit $50. McMahon Eng. Co., 180½ Main St., Menasha, engr. CD 10/15.

BUILDINGS—SLC

▲ **O., Cincinnati** — SCHOOL — Sisters of Mercy, 2220 Victory Parkway, soon lets contract 2 story, brick, stone high school, Oakwood Ave. $2,500,000. Maguolo & Quick, 3329 Glenmore Ave., archts. Bosch & Latour, 2186 Victory Parkway, engrs. CD 12/22.

HEAVY CONSTRUCTION—LB & CA

WISCONSIN—State Hy. Comn., State Office Bldg., Madison,

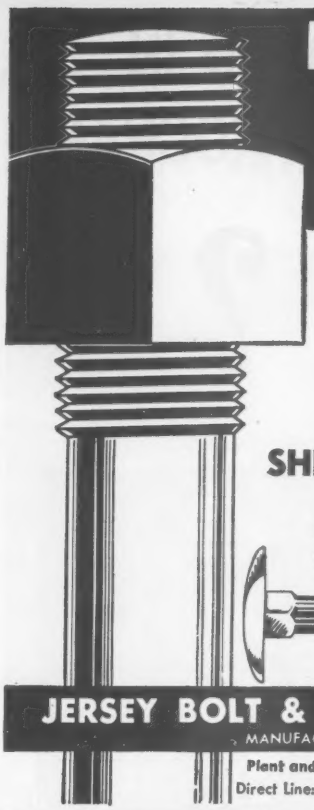
E. & C. Co., 925 E. Abert Place, Milwaukee 12, Wis., CA $597,226, grade, base and con. pavement 0.809 mi. Intersection of S.T.H. 100 and S.T.H. 15, City of West Allis, Contr. 1, Proj. T 058-1 (18), Milwaukee Co. Bids May 5. CD 4/16.

▲ **WISCONSIN**—State Hy. Comn., State Office Bldg., Madison,

Joseph Marchese Constr. Co., and Woerfel Corp., 5345 N. Hopkins St., Milwaukee, Wis., CA $1,280,551, grade, Structures B-40-43 and B-40-57, retaining walls and approach roadways, 0.133 mi. East-West Expressway (Retaining Wall, Wisconsin Electric Power Co., and North 27th St. to North 25th St.), IH 94, Contr. 1, Projs. IN-94-4(12)307 and I-94-4 (11)307, Milwaukee Co. Bids Apr. 14. CD 4/17, under LB.

WISCONSIN—State Hy. Comn., State Office Bldg., Madison,

O'Keefe Constr. Co., 638 N. Superior St., De Pere, Wis., CA $599,158, grade, subbase and culverts C-39-3, 4, 5 and 6 on 11.127 mi. Packwaukee-North County Line Rd., U.S.H. 51, Contr. 1, Proj. F 05-2 (25), Marquette Co.; CA $245,529, grade, subbase, base, bit. con. pavement and structure B-66-25, Slinger Interchange, U.S. Hy. 41, Proj. F 03-1 (72), Washington Co. Bids May 5. Grand total $844,687. CD 4/16.



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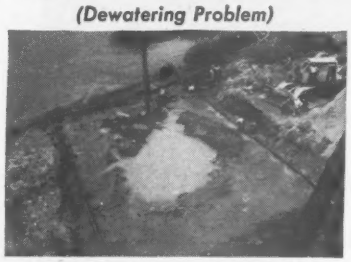

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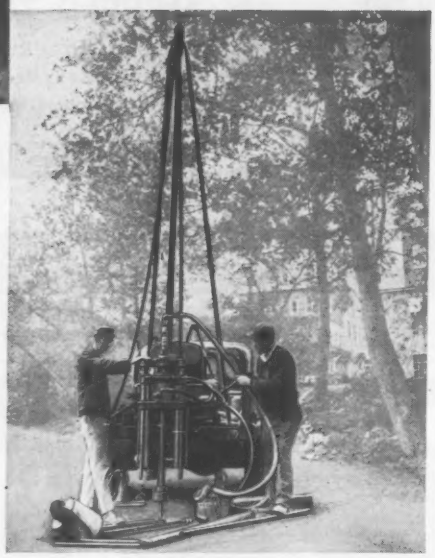

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▲ **MICHIGAN**—State Hy. Dpt., Mason Bldg., Lansing. Bids opened 5/6,

Mich.—**Louis Garavaglia,** 24240 Mound, Centerline, Mich., LB **$1,827,099,** 4 mi. pavement and four structures from point west of M 40 easterly to west of M 119, Van Buren Co. CD 4/24; LB **$170,968** wid'n. roadway on bridge carrying M 97 over Clinton River at west limits of Mt. Clemens, Macomb Co. CD 4/27; LB **$1,727,969,** 6 mi. expressway and two structures on section from north of Hebron Mail Rd. north to US 31, Cheboygan Co. CD 4/27,

Mich.—**S. D. Solomon,** 3760 Elizabeth Lake Rd., Pontiac, Mich., LB **$1,218,364,** 3.6 mi. dual 24 ft. wide pavement and two structures from west M 40 west to Kane Rd. south of Lawrence, Van Buren Co. CD 4/24; LB **$2,726,318,** 5.9 mi. dual 24 ft. pavement and five structures from Kane Rd. west to Thomas Rd. east of Hartford, Van Buren Co. CD 4/24,

Mich.—**C. A. Hull Co.,** 2 Barbour Terrace, Bloomfield Hills, Mich., LB **$2,139,987,** 1.5 mi. dual 24 ft. pavement and three structures from St. Joseph River northwesterly to Pipestone St., Berrien Co. CD 4/24,

Mich.—**Carl Goodwin & Sons,** P. O. Box 38, Allegan, Mich., LB **$2,812,939,** 6 mi. dual pavement from 118 south to M 89 in Plainwell and six structures, Allegan Co.

Mich.—**Cook Contg. Co.,** 1116 Penobscot Bldg., Detroit 26, Mich., LB **$1,488,070,** wid'n. M 97 from 14-Mile Rd. north thru Mt. Clemens to M 59, Macomb Co. CD 4/27,

Mich.—**Sargent Contr. Co.,** 2840 Boy Rd., Saginaw, Mich., LB **$431,368,** wid'n., resurf. 2.6 mi. M 78 from Indiana state line north to US 112 in Sturgis, St. Joseph Co.

BUILDINGS—LB & CA

▲ **Brune-Harpenau Builders, Inc.,** 6457 Glenway, Cincinnati, O., Owner Builds, **$5,200,000,** 200 bsmnt. brick HOMES off Schwartze Ave., CINCINNATI, O. Jos. M. Allen Co., 5555 Glenway, Cincinnati, O., engrs.

▲ **Wm. Passalaqua Builders,** 17300 Miles Ave., Cleveland 28, O. LB **$1,336,800** (8 bidders), general constr. HIGH SCHOOL addn., 1st section, CLEVELAND HEIGHTS, O. Bd. Educ., 1749 Lee Rd., Cleveland 18, O. Bids May 5. CD 4/1.

▲ **Dawson-Evans Constr. Co.,** 5300 Vine St., St. Bernard, O., CA Est. **$1,000,000,** FABRICATING PLANT, OFFICE, Vine St., ST. BERNARD, O. Limbach Co., 521 Pressley, Pittsburgh, Pa. Hunting, Larsen & Dunnells, Inc., Century Bldg., Pittsburgh, Pa., archt.-engr.

Clifford C. Loss, Inc., 5262 Spicer, Toledo, O., Owner Builds, **$650,000,** 52 HOMES in Valley Forge Community on River Rd., south edge of WATERVILLE, O.

▲ **F. A. Wilhelm Constr. Co.,** 3914 Prospect St., Indianapolis, Ind., CA **$2,850,000,** HIGH SCHOOL, 16 St. and Post Rd., Warren Twp., INDIANAPOLIS, IND. Warren Twp. Marion Co. School Bldg. Corp., Warren Central High School, E. 10 St. and Post Rd., Indianapolis, Ind. Bids Mar. 3. CD 3/25, under LB.

Megal Constr. Co., 12714 W. Hampton Ave., Milwaukee, Wis., CA Est. **$500,000,** 25,000 sq. ft. concrete, steel, brick, block PLANT, GRAFTON, WIS. Phillipp Lithographing Co., 1422 N. 4 St., Milwaukee 3, Wis.

▲ **Hunzinger Constr. Co.,** 4577 N. 124th St., Milwaukee, Wis., CA **$2,060,000,** general contract Marshall JUNIOR-SENIOR HIGH SCHOOL, MILWAUKEE, WIS. Bd. School Directors, 1111 N. 10 St., Milwaukee 3, Wis. Bids Apr. 20, awarded May 6. CD 4/24, under LB.

Staff Electric Co., 1659 N. Jackson St., Milwaukee 32, Wis., CA **$420,914,** electrical work (Milwaukee, Wis.), CD 4/25.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲† **Kan., Topeka**—OPERATIONS BLDGS.—BA 6/9—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., launch operations bldgs. near Forbes Air Force Base, IFB 59-64. CD 5/5.

Mo., St. Louis—BA 6/9—City, Bd. P. Service, 304 City Hall, Zone 3, Compton Avenue Relief Sewer from point near Olive St. south to jct. with Mill Creek Trunk Sewer. $733,400. Horner & Shifrin, 1221 Locust St., Zone 3, engrs. CD 7/25.

† **South Dakota**—BA 6/25—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., furnishing turbine governors, near Pierre, Oahe Reservoir Proj., ENG-25-066-59-123. $400,000-$600,000. CD 9/23.

BUILDINGS—BA

▲† **Minn., Bemidji**—POST OFFICE—BA 6/10—General Services Admin., P. Bldgs. Service, 2306 East Bannister Rd., Kansas City 10, Mo., U. S. Post Office, etc., Appr. No. 47x1,147, Proj. No. 21905. $1,200,000. Plans deposit $40. CD 3/5, under Commercial Buildings.

▲† **Mo., St. Louis**—RECORDS CENTER—BA 6/18—General Services Admin., P. Bldgs. Service, 2306 East Bannister Rd., Kansas City 10, Mo., federal records center, Appr. No. 47x1,147, Proj. No. 23906. $7,085,000. CD 12/3, under Mo., St. Louis County.

▲ **Mo., St. Louis**—FEDERAL OFFICE—BA 6/23—General Services Admin., P. Bldgs. Service, 2306 East Bannister Rd., Kansas City 10, Mo., general contract (except elevator plant), federal office bldg., Appr. No. 47x1,147, Proj. No. 23901. $11,641,000. Plans deposit $150. CD 4/13.

▲ **Tex., Dallas**—HOTEL—Bids Asked—Ramada Hotels, 3825 E. Van Buren, Phoenix, Ariz., 3 story, 250 room hotel $2,000,000. Hedrick & Stanley, 904 Fort Worth Ave., Dallas, archt.-engrs. CD 4/8.

(Continued on page 72)

Dirtmoving superintendent says of NEW vs. OLD...
"loads twice as fast and cuts harder materials"

Ever wonder how a modern scraper compares, production-wise, to an older model that's still in good shape? Here's what Tom Reynolds, superintendent of March Construction Company, Canonsburg, Pa., has to say on the subject.

"I've worked with Tournapulls® for years... and liked 'em all. But the difference between a Tournapull with the new Fullpak® scraper and the old 16-yd P-19 is amazing. Fullpak loads twice as fast and cuts a lot harder type of material than the old machine. I rate the 18-yd Fullpak as the best loading earthmover we have.

"Actual loads? Well, take weight and time tests made by outsiders on one of our recent jobs. We had new and old 'C's' there, plus other machines owned by a coal company working with us on the job.

"The new Fullpak was loading an average of 14 yd of earth mixed with coal while the P-19 got 12 yd. Another make scraper, a 20-yd unit with over 250 hp, carried only the same yardage as our 18-yd 'C' but took twice as long to load.

In partnership with a coal company, March Construction, Canonsburg, Pa., carved a new school athletic field out of a coal-studded hillside at Rodi, Pa. March used an 18-yd C Fullpak and 2 older 16-yd L-W Model C's to move 320,000 yd of mixed material. "We've been in construction work since 1936, and owners Dale H. Reynolds and Robert Bucheli have found L-W equipment tops in all departments wherever they used it."

"Firm steering with electrics"

"Stacked up against all competition, Tournapull's biggest advantage is its electric controls — especially for positive steer. Trying to maneuver a hydraulic-steer scraper is a lot of work... takes a lot of steering wheel spin. And keeping it in line isn't easy. Hit a rock and the machine kicks around, out of line.

"With the 'Pull*, turning is no effort ... just flip a switch. And there's firm steering control... no kick-around. You can work a lot closer to the edge of fills and cuts."

"Nothing can compare to Fullpaks," says Operator Edwin Evans. "I get a good load in shale where other rigs can't pick up a pay load at all. And I like these electrics. There's no kickback — no operator strain. Electricity does the work."

"No major repairs in 3 years"

"Operating costs are less with 'C's' too... same as with all L-W rigs. The first C 'Pulls I supervised were never down for major repairs in a 3-year period. We had no engine, electric motor, or transmission trouble. Only replacements needed were minor... like cables and switches. Availability was close to 97%."

Why not see for yourself? Let us show you the 18-yd C Fullpak in action on your current job. There's no obligation for a demonstration.

*Trademark CP-2030-DCJ-1

LW

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Gahagan Dredging Corporation,
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Write, wire or phone Whitehall
3-2558. Cable "Walgahagan".

(Continued from page 70)

HEAVY CONSTRUCTION—LB & CA

▲† **English Electric Export & Trading Co. Ltd.**, 750 3rd Ave., New York, N. Y., LB $6,467,313, (4 bidders), furnishing hydraulic turbines, consisting eight 92,000 hp. fixed blade propeller type hydraulic turbines, complete with draft tube liner, pit liner and appurtenant parts, also incl. tugine model tests and services of supervising erectors and master mechanics, Big Bend Reservoir near Fort Thompson, ENG-25-066-59-98, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids May 7. CD 3/27.

† **Eugene Luhr & Co. & Midwest Constr. Co.**, Nebraska City, Neb. LB $469,688. Est. $511,269, (5 bidders) revetments, levees and structures, near Blair, ENG-25-066-59-115. NEBRASKA U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids May 7. CD 4/20.

† **Construction Industries, Inc.**, P. O. Box 672, Salina, Kan., CA $538,000, readiness crew bldg., utilities, Schilling Air Force Base, ENG-23-028-59-50, SALINA, KAN. U S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids Apr. 23. CD 5/5, under LB.

† **Virginia Carolina Electrical Works**, 1007 E. Main St., Norfolk, Va., CA $987,000, air-conditioning Bldgs. 2, 3, 6, 9, 20, 21 and 24 at Veterans Administration Hospital TOPEKA, KAN. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Apr. 21. CD 4/27, under LB.

Clay P. Carey Co., Brownwood, Tex. CA Est. $720,000. 72 mi. gas lines, Brownwood area, Brown Co. TEXAS. Bi-Stone Fuel Co., c/o contractor.

Sira & Payne, Contractors, Lawson and Cartwright Rd., Dallas, Tex., CA $832,392, Constr. 59-36, 25 mg. Lake June Reservoir, Lake June Rd. and Algonquin Dr., DALLAS, TEX. City, City Hall, Dallas, Tex. Bids Apr. 20. CD 4/29, under LB.

▲ **COLORADO**—State Hy. Dpt., 4201 East Arkansas, Denver,

L. H. Kilgroe Constr. Co., 7911 W. 6 Ave., Lakewood, Colo., CA $1,658,758, Est. $1,748,000, grading, structures b. conc. 3.068 mi. Unit No. 1, Colorado Proj. No. I-25-2(28) 145, El Paso Co. Bids Apr. 28. Awarded Apr. 29. CD 5/4.

BUILDINGS—LB & CA

▲ **T. E. Ibberson Co.**, 3400 Woodale Ave., St. Louis Park 16, Minn. CA Est. $1,000,000, 1 story FEED MILL and PROCESSING PLANT with storage, Ellis R.R. 4, SIOUX FALLS, S. D. Farmers Union Grain Terminal Assn., 1667 Snelling Ave. North, St. Paul, Minn. CD 4/14.

Maninelli Constr. Co., 4502 S. 36th St., Omaha, Neb. CA $705,000. Westbrook JUNIOR HIGH SCHOOL, OMAHA, NEB. School Dist. 66, 8727 Shamrock Rd., Omaha, Neb. Bids Apr. 28. Awarded May 4. CD 4/14.

Manhattan Constr. Co., Manhattan Bldg., Muskogee, Okla., CA $504,805 General HOSPITAL addn., MUSKOGEE, OKLA. General Hospital, c/o Horstman & Mott, Manhattan Bldg., Muskogee, Okla. Bids Apr. 16. CD 3/30.

Howell Refining Co., Kingsville Rd., Corpus Christi, Tex. Owner builds. $750,000. REFINERY ADDN. CORPUS CHRISTI, TEX. CD 4/24.

A. P. Kasch & Sons, Box 1472, Big Spring, Tex. LB $579,429, Base Bid 1. LB $683,780, Base Bid 2, (6 bidders) 1st part CENTRAL YMCA, MIDLAND, TEX. Young Men's Christian Ass'n., 1704 W. Storety St., Midland, Tex. Bids Apr. 29. CD 4/27.

▲ **Henry C. Beck Co., Contractors**, 1st National Bank Bldg., Dallas, Tex. CA $3,250,000, 14 story, and bsmnt., BANK-OFFICE, ODESSA, TEX. American Bank of Commerce, 110 E. 7th St., Odessa, Tex. Wyatt C. Hedrick, 1200 T&P Bldg., Fort Worth, Tex. archt.

Northeast Ind. School Dist., 10214 Sommers Dr., San Antonio, Tex., rejected bids May 4, ELEMENTARY SCHOOL No 2, Walzen Rd., SAN ANTONIO, TEX. LB $519,888. Will re-advertise. CD 5/8, under LB.

Martin & Martin, 534 Lincoln, Denver, Colo., CA Est. approx. $500,000, 1 story, 75,000 sq. ft. WAREHOUSE and OFFICE, South Colorado Blvd. and Valley Highway, DENVER, COLO. Lerner Shops, 1770 Lincoln, Denver, Colo. Ken R. White, 1567 Marion St., Denver, Colo., structural engr. CD 1/13.

Hensel-Phelps Constr. Co., Greeley, Colo., CA $674,644, general contract, 1 story, 216 x 228 ft. PACKING PLANT, GREELEY, COLO. Capitol Packing Plant, c/o Denver Office, 5000 Clarkson, Denver, Colo. Bids Apr. 30. Awarded May 5. CD 5/7.

N. G. Petry Constr. Co., 1114 West 7 Ave., Denver, Colo., CA $750,000, 1 story part bsmnt. 20,000 sq. ft. CHURCH addn., DENVER, COLO. Temple Emanuel, East 16 Ave. and Pearl St., Denver, Colo. Robert M. Morris, 330 W. Asbury Ave., Denver, Colo., archts.

▲† **McCann Constr. Co., Inc.**, 1813 E. Lancaster, P.O. Box 788, Fort Worth, Tex., CA $2,007,680, (30 bidders), remodeling, imprv. 760 units Wherry FAMILY QUARTERS, Sandia Base, Inv. No. S29-044-59-51, ALBUQUERQUE, N. M., U. S. Govt. Headquarters, Field Command, P. O. Box 5100, Albuquerque, N. M. Bids Apr. 29. CD 4/10.

▲† **D & L Constr. Co.**, c/o L. A. Payne, 13238 Sherman Way, North Hollywood, Calif., CA $3,834,000, 251 unit Capehart HOUSING, White Sands Missile Range, Inv. No. ENG-29-005-59-65, LAS CRUCES, N. M. U. S. Eng., P. O. Box 1538, Albuquerque, N. M. Bids Apr. 14. CD 4/17, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

▲ **Calif., Los Angeles** — BA 6/3 — Metropolitan Water Dist. of Southern California, 306 W. 3rd St., West

(Continued on page 74)

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Above is a partial view of our on-hand supply of standard and special Gray and Ductile Iron construction castings. This stock is maintained for prompt shipments. An order for one or two castings — or a carload — can usually be filled without delay. We have the earned reputation of doing just that.

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L W
INTERSTATE HIGHWAY PROGRESS REPORT

on Interstate Route 94, Wisconsin

Prosper Kluck's 27.4-mph Adams 660 POWER-*Flow* maintains 5,000' of haul road on Interstate Highway job near Menomonie, Wis. This 190-hp grader smoothed and leveled ridges, filled in ruts, cut drainage ditches . . . kept haul roads in high-speed all-weather condition.

The better the haul road... the bigger your yardage!

Here's how Prosper Kluck used one big LW POWER-*FLOW*® 660 grader to level network of mile-long haul roads on Wisconsin job

On any of today's big-volume Interstate Highway jobs, you're likely to run into the same problem Prosper Kluck of Stevens Point, Wis., did on the building of 2.5 mi of route 94 near Menomonie, Wis. With 800,000 cu yd of sand and sand-rock to move, Kluck naturally chose big, heavy, high-production scrapers . . . 8 of them. But scrapers this size knock the "speed" out of a haul road in a hurry, and with haul distances of up to 5,000', Kluck needed something special in the way of road-maintenance equipment.

His choice: an LW Adams* POWER-*Flow* Model 660 grader. And this choice was a good one! Not only did the 190-hp machine keep Kluck's network of haul routes in top speed condition, it also maintained the fill . . . where the fast-hauling scrapers dumped approximately 500 yards of material per hour!

"Doesn't give us much downtime"

"That torque-converter '660' is a dandy," says Kluck. "It's big and heavy, and doesn't give us much downtime." The job superintendent adds, "The '660' really gets in there and digs when the going is tough. What's more, this big grader can lay down a mighty fine grade."

Let us demonstrate a LeTourneau-Westinghouse Adams Model 660 POWER-*Flow* grader on *your* job. See how it can speed up production haulers and grader work. Ask us anytime. No obligation.

*Trademark G-2060-DCJ-1

This B Tournapull® with 28-yd Fullpak® is one of 3 used by Prosper Kluck on the Interstate Highway job. Fullpak loads *fast*, as bowl is angled at only 1° when loading . . . lets this tough-loading sand flow in almost horizontally.

LW

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

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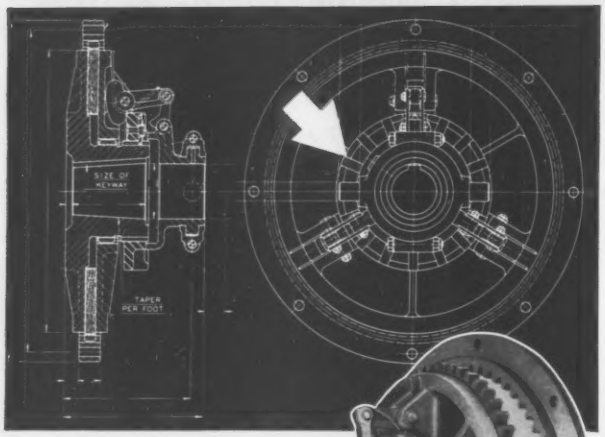
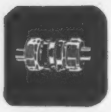
ROCKFORD



Small Spring Loaded

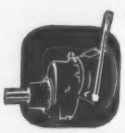
Heavy Duty Spring Loaded



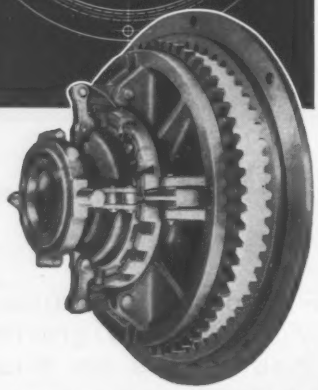
Oil or Dry Multiple Disc

Heavy Duty Over Center

Power Take-Offs



Speed Reducers



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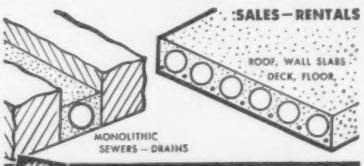

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(Continued from page 72)

Coast Feeder Trunk, 14.57 mi. 60 and 66 in. steel pipe line from city of Southgate to Gardena, Spec. 560. $7,000,000.

▲† **Ariz., Tucson**—HOSPITAL—BA 6/9—U. S. Eng., 751 S. Figueroa St., Los Angeles 17, Calif., hospital, Davis-Monthan Air Force Base, ENG-04-535-59-92. $2,000,000. CD 4/29.

BUILDINGS—BA

▲ **Calif., Los Angeles**—JUNIOR COLLEGE—BA 6/5—Bd. Educ., 1425 S. San Pedro, rein.-con. 2nd increment, East Los Angeles Junior College. $2,400,000. CD 11/21/57.

▲ **Calif., San Francisco**—HOTEL, etc.—BA About 8/15—Ilton Hotel Corp., 401 7th Ave., New York City, N. Y., 18 story, 3 level, bsmnt., garage, L-Shaped, rein.-con. hotel, incl. parking on floors 4-10 of hotel and swimming pool, Mason, Ellis, O'Farrell & Taylor Sts. $25,000,000. Wm. B. Tabler, Hotel Statler, 401-7th Ave., New York, N. N., archt., Seelye, Stevenson, Value & Knecht, 101 Park Ave., New York, N. Y., engrs., completion date, approx. Fall 1961. CD 3/13/58.

HEAVY CONSTRUCTION—LB & CA

▲† **Morrison-Knudsen Co.**, 309 Broadway, Boise, Idaho, and **Patti-MacDonald Co.**, 1310 S. Grant St., St. Louis, Mo., CA **$3,595,049**, est. $5,072,834, 3 technical bldgs., Clear Air Force Station, Inv. 59-51, CLEAR, ALASKA. U. S. Eng., 1519 S. Alaska Way, Seattle 4, Wash. Bids Apr. 28. CD 4/30, under LB.

† **Triangle Constr. Co.** and **George L. Thompson**, Kennewick, Wash., CA **$589,263**, earthwork, concrete lining, and structures, Block 201, laterals, wasteway, drains, White Bluffs pumping plant No. 2 and WB10A3 pumping plant, Columbia Basin Proj., Spec. DC 5167, Othello, WASHINGTON. Bureau Reclamation, Dpt. Interior, Ephrata, Wash. Bids April 14. CD 4/20, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento,

McGuire & Hester, 796-66th Ave., Oakland, Calif., CA **$1,143,863**, grade, surf. 1.7 mi. McHenry Ave. to widen 2 lane hy. to 4 lanes between Needham St. and Modesto Irrigation Dist. lateral three, incl. storm drainage facilities, X-Sta-109-Mod-A, Stanislaus Co. Bids Apr. 29. CD 5/4, under LB.

▲† **Oberg Constr. Corp.**, 19424 Plummer St., Northridge, Calif., CA **$2,310,247**, Santa Ana River Basin Carbon Canyon Dam and appurtenances, Orange Co., ENG-04-353-59-25, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 18. CD 3/23, under LB.

North Bay Constr. Co., 560 Boyd St., Santa Rosa, Calif., CA **$731,960**, sewage treatment works, pumping plant, grading, etc., FREMONT, CALIF. Union Sanitary Dist., 116 Baine Ave., Fremont, Calif. Awarded Mar. 31. CD 4/1, under LB.

▲† **L. E. Dixon Co.**, 409 South California St., San Gabriel, Calif., CA **$8,752,000**, administration area facilities Naval Air Station, incl. personnel and admin. bldgs., etc., roads, utilities and sewage plant, LEMOORE, CALIF. Dist. P. Wks. Office, 12th Naval Dist., Room C112, San Bruno, Calif. Bids Apr. 22. CD 5/6, under LB.

▲ **Peter Kiewit & Sons Co.**, 415 Kieways Ave., Arcadia, Calif., CA **$5,582,205**, site preparation terminal area, complex 2, phase 1, Los Angeles International Airport, LOS ANGELES, CALIF. Los Angeles City Dpt. Airports, City Hall, Los Angeles, Calif. Bids May 5. CD 5/8, under LB.

Vincent Rodriques Co., 226 Jackson St., Hayward, Calif., LB **$532,144** (4 bidders) West Trunk sewer unit No. 2, Proj. 58-16, MOUNTAIN VIEW, CALIF. City, City Hall, Mountain View, Calif. Bids Apr. 22. CD 3/27.

▲ **Foster-Marsch Corp.**, 3911 Pacific Hy., San Diego, Calif., LB **$6,212,044** (7 bidders), Second San Diego Aqueduct, prestressed pipe alt., from La Mesa and Lower Otay Reservoir, SAN DIEGO, CALIF. San Diego County Water Auth., 2750 4th Ave., San Diego, Calif. Bids May 8. CD 3/19.

BUILDINGS—LB & CA

▲ **Torrance Land Co.**, 10835 Santa Monica Blvd., Los Angeles 35, Calif., CA **$1,321,600**, 114 stucco DWELLINGS, Tr. 2763, LA HABRA, CALIF. Youngblood Land Co., 10835 Santa Monica Blvd., Los Angeles 35, Calif.

Hale Co., Box 2277, Brookhurst Station, Anaheim, Calif., Owner Builds, **$537,744**, 51 frame DWELLINGS, Larwood Rd., Angelus Ave., LEMON GROVE, CALIF.

CANADA

HEAVY CONSTRUCTION—BA

▲ **Ontario**—BA 6/2—St. Lawrence Seaway Auth., Temporary Bldg., Ottawa, sub-structure incl. 8 piers, abutment high level bridge over North Channel, St. Lawrence River, between Cornwall and Cornwall Island. H. H. L. Pratley, 1117 St. Catherine W., Montreal, Que., engr. Foundation of Canada Engineering Corp. Ltd., 8 Spadina Rd., Toronto, Ont. assoc. consults. on foundation.

BUILDINGS—SLC

N. B., **Sussex**—WAREHOUSE, etc.—Atlantic Dairy Products, soon lets contract part 3 story, 90 x 130 ft., steel roof deck and structural steel frame warehouse offices, and plant for production of powdered milk, $900,000. Philip F. Goodfellow, 1117 St. Catherine St. W., Montreal, Que., archt. S. L. Sachs, 4920 Western Ave., Montreal, Que., engr. CD 3/4.

HEAVY CONSTRUCTION—LB & CA

▲ **ONTARIO** — Dpt. Highways, Parliament Bldgs., Toronto,

McNamara Road Constr. Co. Ltd., 42 Industrial St.,

(Continued on page 76)

Cut costs with Tournatractor®...it puts in

More profit-time... reduces waste-time

If you want to determine, for your *own* satisfaction, the advantages of owning a big LeTourneau-Westinghouse Tournatractor, do some stop-watch-timing of any of the tractors you *now* own.

You'll find, if the job you're working is spread out in any way, that a tractor spends a *lot* of time doing nothing more than *going to* and *coming from* the actual *productive* jobs it's handling for you. And travel time earns you *nothing*. It's only high-cost "overhead".

Now figure travel time at 17 mph

With Tournatractor, you cut that item of overhead by more than half. That's because, on job-to-job travel, Tournatractor moves more than twice as fast as the fastest crawler tractor. It *runs* between assignments... at speeds to 17 mph! You get more work done per day, and very often you can get by with one less tractor in your fleet.

Fast...and a hard worker

Because Tournatractor *is* fast, don't get the idea it's just a "hit-and-run" flyweight. Not on your life! It's got the sock and ruggedness of a true "heavy". With 218 hp and up to 15 tons of work-weight, it can match muscles with any tractor its size. On most of your jobs... in fact, on work done at 2 mph or over... it *betters* the "pounds-pull" offered by crawler-tractors that cost more money and accomplish less work.

Contractors today are using Tournatractor on all types of tractor work, from dozing to push-loading, to clean-up assignments. And it can pull and operate a wide range of work attachments. You'll often see Tournatractor pulling big scrapers, water tanks, and compactors. Fact is, it's a "natural" for compacting, because when those big tires are hydroflated, Tournatractor adds a "bonus" compaction factor of 20 tons.

Let us show you how Tournatractor can fit into *your* operations. Let us help you analyze your tractor costs and show you specifically how this fast, mobile machine can pay you big dividends in a hurry.

A few quick facts about the LW Tournatractor... RIMPULL as good or better than comparably-sized crawlers, at all speeds over 2 mph... ROADABILITY anywhere, with no damage to concrete, blacktop, planking, or rail ties... TORQUE-CONVERTER TRANSMISSION with non-stop shift... EASY OPERATION with fingertip-switch electric control of dozer blade and other attachments... 218 horsepower, 15 tons of working weight.

CT-2111-DC-1

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A HANGAR ENGINEERED for the FUTURE

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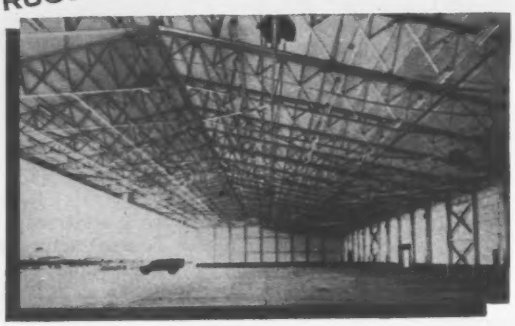

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ERWIN-NEWMAN hangars are built with an expandable future in mind. The length can be enlarged and still have clear span space up to several hundred to several thousand feet. Vertical clearance can be increased, in the future, by adding tail gates at any number of points across the front.

Our years of experience in design and construction make it imperative you consult with us when you plan a hangar of any size (no obligation of course).

Due to certain patent infringements it is necessary to publish this

IMPORTANT PATENT NOTICE

The Erwin-Newman Suspended Cantilever Hangars are covered by United States Patent No. 2,687,102, and similar foreign patents issued to us and under which we hold exclusive rights. We have not (at this writing) issued any licenses of other authorization for the design, engineering, construction, or use of these patented hangars. The Erwin-Newman Company must, and will, protect its rights under these patents against infringements.

DESIGNERS AND CONSTRUCTORS
U. S. Patent No. 2,687,102

P. O. BOX 1308 HOUSTON, TEXAS

(Continued from page 74)

Leaside, Toronto, CA $1,006,669, granular base, concrete base, concrete pavement and hot mix paving 5.25 mi. Hy. 401 from interchange of Hy. 29 easterly 5 mi. to Maitlands County Rd., Contract 59-50. Bids Apr. 29, awarded May 4. CD 5/6, under LB.

Canadian Vickers Co. Ltd., Maisonneuve Bldg., Montreal. Que., LB $525,090 (6 bidders), fabrication, erection, installing 4 boilers and equipment central heating MONTREAL, QUE. Dpt. Transport, Hunter Bldg., Ottawa, Ont. CD 5/27.

BUILDINGS—LB & CA

▲ Acme Constr. Co., Ltd., Rothesay Ave., Saint John, N. B., CA $1,000,000, 4 story, full bsmnt., provision for 2 addnl. floors, 100 ft. frontage U-shaped extending to depth 128 ft 8 in., PROVINCIAL BLDG., Charlotte St., SAINT JOHN, N. B. Provincial Dpt. P. Wks. Parliament Bldg. Fredericton, N. B., Bids Apr. 30, awarded May 4. CD 4/14.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

▲ Colombia—Bids Asked—Empresas Publicas de Medellin, Treneras Dam on Rio Guadalupe, near Medellin. Experienced firms should submit qualifications by June 30. CD 1/21/54.

PROPOSED PROJECTS

WATER SUPPLY

▲ Ala., Huntsville—City, City Hall, water distr. system extensions, $1,600,000. G. W. Jones & Sons, 307 Franklin St., consult. engrs. CD 3/10.

Ala., Scottsboro—Water Works & Sewer Bd., raw water pumping station, supply lines, filtration plant and feeder main. $716,000.

▲ Fla., Melbourne—City, City Hall, sewage treatment plant and sewer lines, $3,300,000. Alfred LeFeber & Assocs., 2933 Woodburn Ave., Cincinnati, O., consult engrs.

▲ Utah, Brigham City—Brigham City Council, City Office, bond election May 26, water sys., large reservoir and possibly new power plant and 375,000 gal. reservoir. $2,500,000.

▲ Wash., Seattle—City, County-City Bldg., Zone 4, 36 in. pipe lines east shore Lake Washington to bring water from Cedar River pipe line to Bellevue, Kirkland and other East Side area, $1,500,000. R. W. Morse, city engr. CD 3/22/54.

SEWERS, WASTE DISPOSAL

▲ Ala., Huntsville—City, City Hall, complete outfall sewerage sys. $2,000,000. J. W. Goodwin Engineering Co., Inc., 2111 7 Ave. S. Birmingham, and G. W. Jones & Sons, 307 Franklin St., Huntsville, consult. engrs. CD 8/21/56.

▲ Ala., Huntsville—Huntsville Utilities Bd., City Hall, sewerage system imprvs. $1,750,000. Goodwin Engineers, Inc., 2111 7 Ave. S., Birmingham, consult. engr.

▲ Conn., Plainville—Town, Bd. Sewer Comrs., P.O. Box 231, 21 mi. sewers, 4 pumping stations, sewers in Farmington Ave., Cooke St., Shuttle Meadow, West Main St., $1,707,000, Bids 1959; sewers, Mountainview, $130,000. Bowe, Albertson & Assocs., 75 West St., New York, N. Y., consult. engrs. CD 3/31.

▲ D. C., Wash.—D. C. Govt., Sanitary Engineering Dpt., 499 Pa. Ave. N.W., Slash Run Outlet Sewer, (formerly L St.) storm and sanitary via New Hampshire Ave., $1,640,000; 48 in. S.E. Relief Water Mains, 15 and Kentucky Ave. S.E. to 18 and Minnesota Ave. S.E., $900,000; S.W. Sanitary Interceptor Sewer, Main Ave., N and O Sts. S.W., $1,250,000; addnl. sewer syphon underneath Anacostia River and section of outfall sewer relief, $1,000,000; Michigan Ave. Valley N.E. storm sewers between 12 and 17 Sts. N.E., $750,000; separation of combined sewerage systems various locations, $300,000; Upper Potomac Relief Interceptor along Potomac, Rock Creek Park to Chain Bridge, $300,000; relief of Potomac River pollution, Constitution Ave. Bridge approaches, $1,500,000. Funds appropriated. CD 9/9.

▲ Ill., Belleville—City, City Hall, sanitary trunk line, interceptor and lateral sewers, sewerage treatment plant, relief storm sewers, $3,050,000. Russell, Axon & Assocs., 408 Olive St., St. Louis 2, Mo., consult. engrs. CD 1/8/58.

Miss., New Albany—Town, Town Hall, sewage treatment plant. $500,000. Leland B. Cook, Tupelo, Miss., engr. CD 4/23.

Tex., Groves—City, sewer facilities (Tex. 41-P-3065). $660,000. Geo. J. Schaumberg, 2627 Lowell Ave., Beaumont, consult. engr. CD 10/3.

BRIDGES

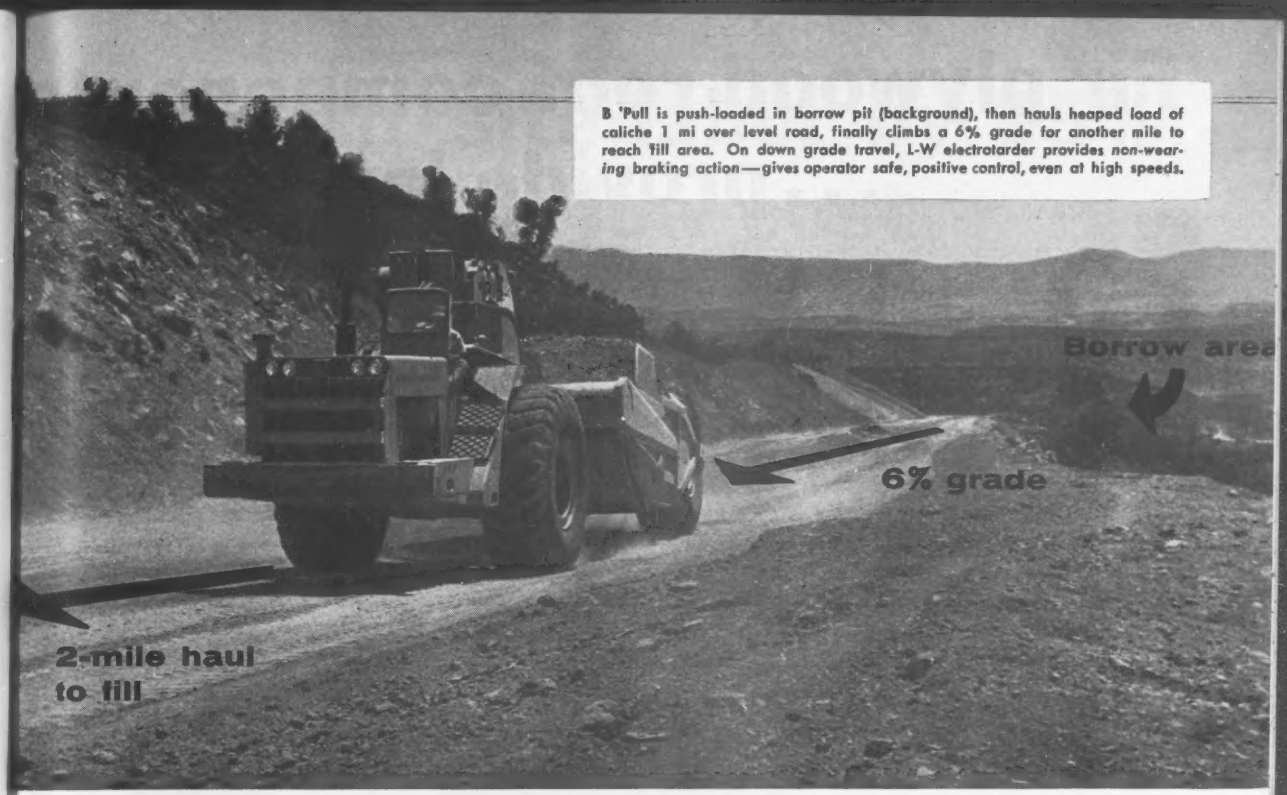
▲ D. C. Wash.—District of Columbia Government, Dpt. Hys., 499 Pennsylvania Ave. N. W., grade crossing interchange Virginia and New Hampshire Aves. N. W. to Pennsylvania Ave. and to Station 30, Whitehurst Freeway, near Lincoln Memorial, $13,500,000. Palmer & Baker Engineers, Inc., U. S. Hy. 90 W Mobile, Ala., consult engr. CD 9/5.

STREETS AND ROADS

▲ Ala., Mobile—Mobile Co. Bd. Revenue, Courthouse, voted $3,900,000 bonds Apr. 28, pave, resurface 130 mi. county roads. CD 4/2.

Ark., Little Rock—City, City Hall, widening Hayes St. from West Markham to Asher Ave. to 4-lane highway,

(Continued on page 81)



B 'Pull is push-loaded in borrow pit (background), then hauls heaped load of caliche 1 mi over level road, finally climbs a 6% grade for another mile to reach fill area. On down grade travel, L-W electrotarder provides *non-wearing* braking action—gives operator safe, positive control, even at high speeds.

"They're rugged and reliable"

Says Superintendent for Copper State Construction Co.

Using but one fleet, here's how the Copper State Construction Co. of Mesa, Arizona, handled two tough earthmoving contracts at practically the same time — on the new Cordes Junction-Flagstaff highway (Arizona State Route 79). Both sections, one 6.5 miles, the other 5.7 miles long, involved moving hard-loading materials — clay, caliche, volcanic ash, and malpais rock — over long hauls with steep grades.

Copper State's fleet of earthmovers, led by 5 LeTourneau-Westinghouse B Tournapulls® — three equipped with 35-ton Rear-Dumps, two with 28-yd Fullpak® scrapers — did the work easily and fast. By switching the easy-loading Fullpaks and maneuverable Rear-Dumps back and forth on alternate assignments, schedules were kept on both projects. Between them, the 5 high-speed L-W units moved 80% of the yardage. Three other big scrapers on the job accounted for only 20%.

"We've had 95% mechanical efficiency"

Pleased with the "B" performance, Owen R. Haining, superintendent on job section No. 1, says, "Our B 'Pulls* load fast... they're rugged and reliable. We've had 95% mechanical efficiency." Earl C. Hargrove, section No. 2 superintendent, comments, "These B Rear-Dumps move this malpais rock *fast*. They've got plenty of power and are really maneuverable."

Win contract for 3rd section

Because the contractor made excellent progress on this "double barreled" project, Copper State was able to successfully low-bid on another section of the highway project ... this one 4.5 miles long.

You can lick tough earthmoving projects ... and earn bigger profits ... with dependable 360-hp B Tournapulls. 28-yd Fullpak scrapers and 35-ton Rear-Dumps are interchangeable behind the same prime-mover. Ask for details and demonstration.

One of Copper State's 3 big L-W Rear-Dumps is shown dumping capacity load of malpais rock in fill area of new roadbed — on 6,500' high Mogollon Rim Plateau. The new 50-mi section of highway 79 will save an hour of driving time between Phoenix and Flagstaff.

*Trademark BRBP-2016-DCJ-1

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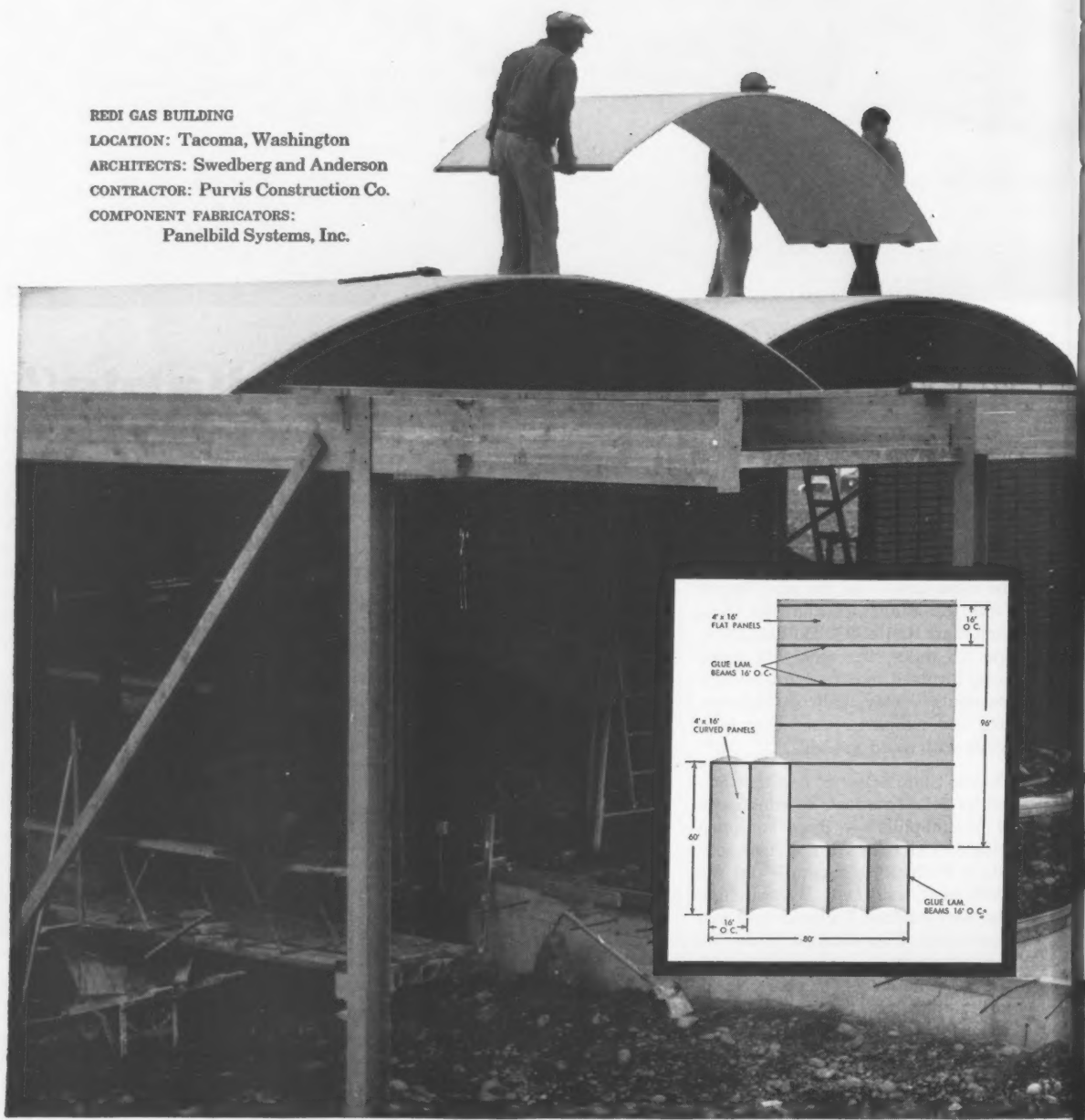
A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Fir plywood roof components ...provide large clear

REDI GAS BUILDING
LOCATION: Tacoma, Washington
ARCHITECTS: Swedberg and Anderson
CONTRACTOR: Purvis Construction Co.
COMPONENT FABRICATORS:
Panelbild Systems, Inc.



reduce on-site labor by 85%
floor areas at low cost

FIR PLYWOOD COMPONENTS helped speed and simplify roof construction on this striking office-display-warehouse building. The multiple arch roof in the front of the building is composed of curved stressed-skin panels, each 4 feet wide, spanning 16 feet; the rear of the building is roofed with 4 x 16 foot flat stressed-skin panels. Both combine roof decking insulation and finish ceiling in one easily handled component.

In addition to reducing on-site labor by about 85%, the fir plywood roof components provide superior structural values and permit large clear floor areas without supplementary support from purlins or trusses.

The in-place cost of the flat stressed-skin plywood panels came to 79c per square foot, the curved panels, $1.10 — or about 10 per cent less, locally, than comparable joist or truss construction providing the same clear floor areas with conventional decking, insulation and finish ceiling.

For more information about fir plywood—its uses and advantages—write (USA only):

DOUGLAS FIR PLYWOOD ASSOCIATION
TACOMA 2, WASHINGTON
—an industry-wide organization devoted to research, promotion and quality control

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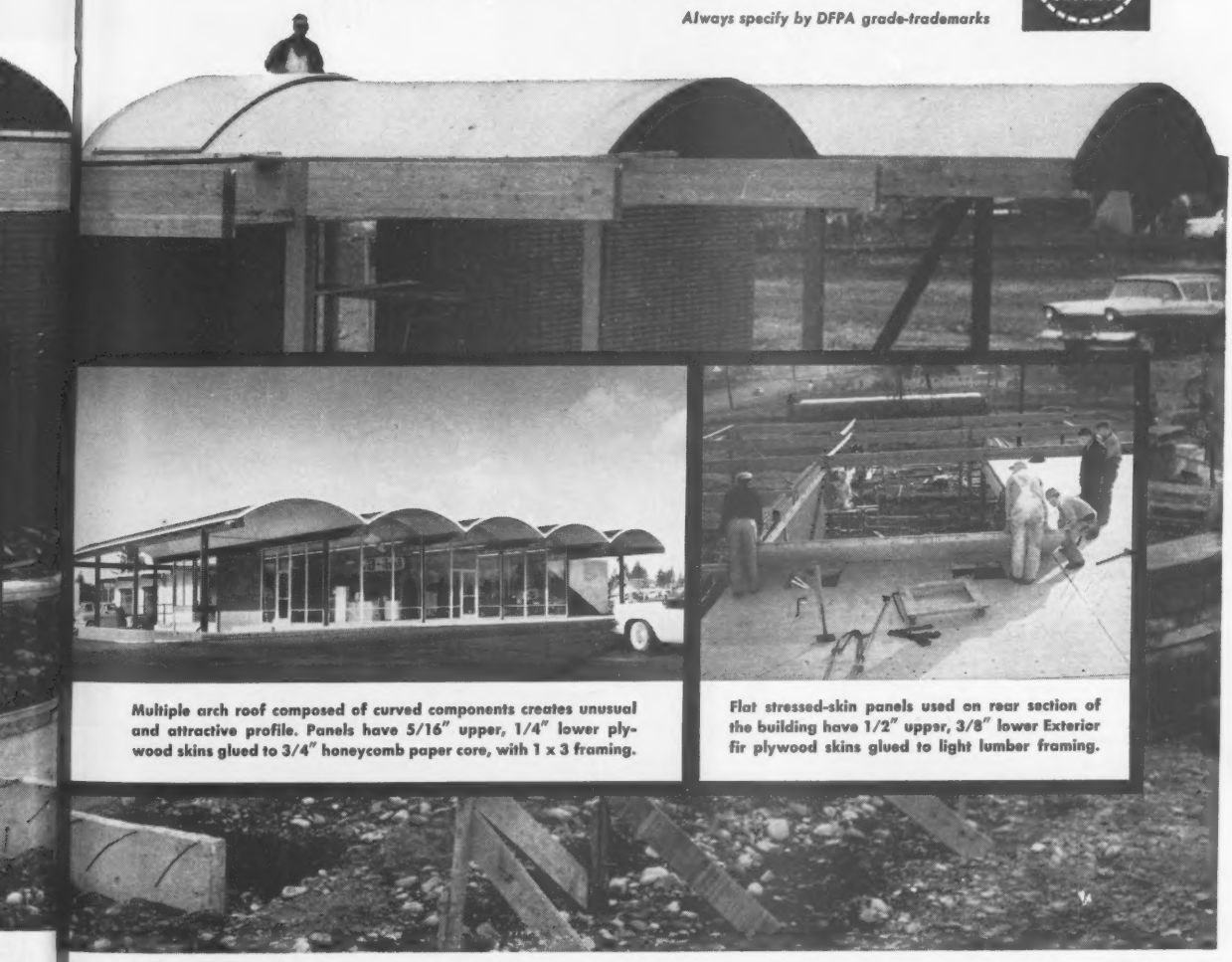

Multiple arch roof composed of curved components creates unusual and attractive profile. Panels have 5/16" upper, 1/4" lower plywood skins glued to 3/4" honeycomb paper core, with 1 x 3 framing.

Flat stressed-skin panels used on rear section of the building have 1/2" upper, 3/8" lower Exterior fir plywood skins glued to light lumber framing.

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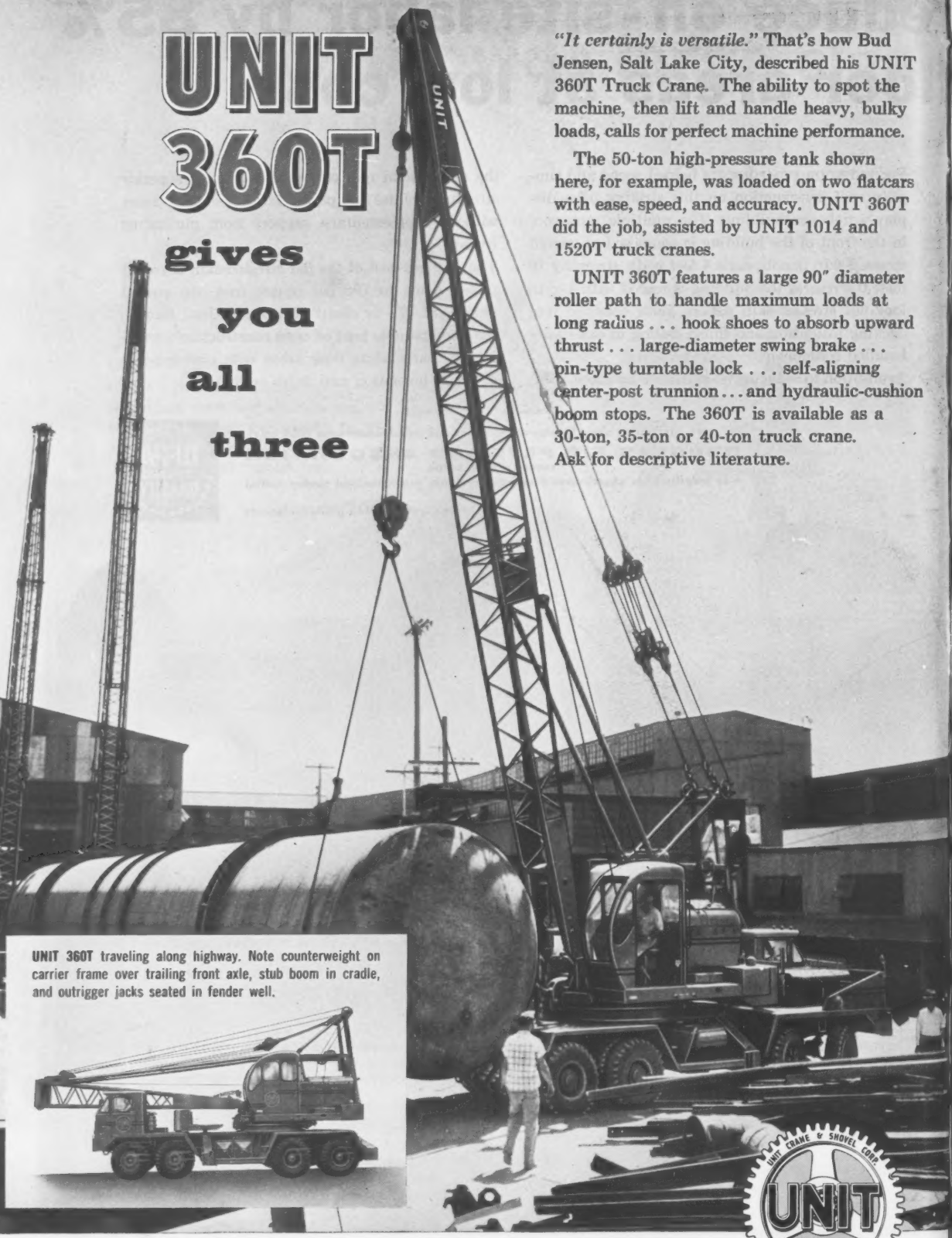
UNIT 360T gives you all three

"It certainly is versatile." That's how Bud Jensen, Salt Lake City, described his UNIT 360T Truck Crane. The ability to spot the machine, then lift and handle heavy, bulky loads, calls for perfect machine performance.

The 50-ton high-pressure tank shown here, for example, was loaded on two flatcars with ease, speed, and accuracy. UNIT 360T did the job, assisted by UNIT 1014 and 1520T truck cranes.

UNIT 360T features a large 90" diameter roller path to handle maximum loads at long radius . . . hook shoes to absorb upward thrust . . . large-diameter swing brake . . . pin-type turntable lock . . . self-aligning center-post trunnion . . . and hydraulic-cushion boom stops. The 360T is available as a 30-ton, 35-ton or 40-ton truck crane. Ask for descriptive literature.



UNIT 360T traveling along highway. Note counterweight on carrier frame over trailing front axle, stub boom in cradle, and outrigger jacks seated in fender well.

UNIT CRANE AND SHOVEL CORP.

6315 West Burnham Street, Milwaukee 19, Wisconsin, U. S. A.

(Continued from page 76)

$600,000. Max A. Mehlburger, Pyramid Life Bldg., consult. engr. CD 4/23.

▲ **LOUISIANA**—State Hy. Dpt., Hy. Office Bldg., Baton Rouge,

Orleans Parish—4.5 mi. Interstate Hy. east of New Orleans. $35,000,000. Palmer & Baker Engineers, Inc., U. S. Hy. 90 W., Mobile, Ala., engr.

NEW YORK—State Dpt. P. Wks., State Office Bldg., Albany,

Cayuga Co.—reconstr. 4½ mi. section Rte. 90, Levanna Rd. to Schobey St., Union Springs, FAI Proj. $800,000.

Tex., Richland Hills—City, c/o Paul C. Daniels, mayor, City Hall, street paving south of Hy. 183, $600,000. Reaves & Gregory, 3332 W. 7 St., Fort Worth, consult engrs. CD 11/18.

EARTHWORK, WATERWAYS

▲† **Alabama-Georgia**—U. S. Eng., 2301 Grant St., Mobile, Ala., approaches, bridges and appurtenances, Walter F. George Lock Dam, Chattahoochee River. $11,700,000. Erwin Engineering Corp., 150 Savannah St., Mobile, consult. engrs. CD 9/19.

Fla., Miami—City, City Hall, Dinner Key, dredging Dodge Island Site, $500,000. City Engineering Dpt., 3332 Pan American Dr., consult. engr.

AIRPORTS

▲† **Colo., Colorado Springs**—NORAD HEADQUARTERS—U. S. Eng., 1709 Jackson, Omaha 2, Neb., NORAD headquarters, (underground) $30,000,000. Parsons, Brinckerhoff, Hall & Macdonald, 165 Broadway, New York 6, N. Y., consult. engrs. CD 3/26/59.

▲ **Mich., Detroit**—AIRPORT HANGAR—Bd. Supervs. Wayne Co., City-County Bldg., 150 ft. x 170 ft. expandable airport hangar at Detroit-Wayne County Airport for Delta Air Lines, Inc., Atlanta Airport, Atlanta, Ga. $1,500,000.

▲ **O., Cleveland**—RUNWAY EXTENSION—City, Dpt. Port Control, Wm. J. Rogers, dir., City Hall, Zone 14, plans by Dalton & Dalton, consult engrs.-archts.; The Arcade, Zone 14, runway exten. Cleveland Hopkins Airport. $3,000,000. CD 12/17.

▲ **Pa., Phila.**—BAGGAGE CLAIM BLDG., etc.—Dpt. Procurement, City Hall Annex, plans by Abraham Levy, 1420 Walnut St., baggage claim bldg., Loading Pier No. 3, related facilities, Phila. International Airport. $2,500,000. Bids soon. CD 12/5/57.

PUBLIC BUILDINGS

Ark., Monticello—APARTMENTS—Arkansas A & M College plans by Marvin E. Frank, Armstrong Bldg., El Dorado, 2 story boys' residences, five 1 story married students apartments, remodeling Horsfall Hall dormitory for girls and remodel Harris Hall dormitory for boys. $875,000. CD 12/3/52.

Calif., Cupertino—SCHOOL—Cupertino Union Elementary School Dist., 10300 Vista Dr., plans by Kai H. Porter, 3850 Middlefield Rd., Palo Alto, Eaton Elementary School. $500,000. Bids in June. CD 11/11/57.

Calif., Los Angeles—SCHOOL—Bd. Educ., 1425 S. San Pedro, plans by Morris D. Verger, 8222 W. 3 St., Redlands St. School. $560,000. CD 6/9.

▲ **Calif., Los Angeles**—FIRE DEPARTMENT FACILITIES—City, City Hall, $14,500,000 bond election May 26, (1) Fire Dpt. Headquarters annex (2) Firemen's Training Academy (3) Fire Dpt. Signal Office (4) shops and right of way. CD 6/6/55.

▲ **Calif., Los Angeles** — POLICE FACILITIES — City, Police Dpt., City Hall, plans by Kistner, Wright & Wright, 1125 W. 6 St., Los Angeles, headquarters and garage police facilities, Pacoima, $550,000; headquarters and garage police facilities in Los Angeles University area, $550,000. CD 6/16/58.

▲ **Calif., Milpitas**—SCHOOLS—Milpitas School Dist. of Santa Clara County, Milpitas, plans by Mitchell VanBourg & Assocs., Hotel Claremont, Berkeley, elementary school, $749,200. Junior High School. $1,225,800. CD 4/16.

▲ **Calif., Oakland**—HOSPITAL—Alameda Co. Courthouse, plans by Stone, Marraccini & Patterson, 536 Mission, San Francisco, Fairmont Hospital addn., San Leandro. $1,031,501.

Calif., Pescadero—SCHOOL—Pescadero Union High School Dist., North St., plans by Peter Kump, 1075 Curtis St., Menlo Park, 1 story, 29,000 sq. ft. wood frame high school, 1 story steel frame gym. $650,000. CD 1/10/58.

Calif., Rialto—SCHOOL—Rialto School Dist. plans by Harold Gimeno, 1400 N. Sycamore St., Santa Ana, 26,000 sq. ft. Latten Elementary School. $500,000.

Calif., San Jose—SCHOOL—Alum Rock Union Elementary Dist., c/o Supt., 149 N. White Rd., plans by Clyde Goudie, 307 Phelan Ave., Lyndale School, White Rd., $530,000. Bids early in June. CD 6/3/57.

▲ **Calif., San Jose**—HOSPITAL—Santa Clara Co., Courthouse, plans by Stone, Marraccini & Patterson, 536 Mission St., San Francisco, Stages 4 and 5, hospital addns., dietary and outpatient clinic and admin. office. $1,000,000.

▲ **Fla., Sanford**—SCHOOL—Seminole Co. Bd. P. Instruction plans by John A. Burton IV, First St. and Mellonville Ave., Senior High School, Northeast Shore of Lake Jenny. $1,000,000.

Ga., Augusta—SCHOOL—Richmond Co. Bd. Educ., 2083 Heckle St., plans by Eve & Stulb, Masonic Bldg., Fleming High School. $750,000-$800,000.

Ga., Savannah—NURSING HOME—Chatham Co., nursing home for indigent, $650,000.

▲ **Ill., Arlington Heights**—SCHOOL—Arlington Heights High School Dist. 214, 502 W. Euclid Ave., plans by Samuelson & Sandquist, 6038 W. Touhy St., Chicago, high school, Algonquin and Golf Rds. $3,500,000.

▲ **Ill., Bloomington**—SCHOOL—Unit 5 School District, Bd. Educ., Bloomington, voted $1,440,000 bonds Apr. 11, Junior High School. $1,364,000. Keith Middleton, Normal, archt. CD 3/26.

▲ **Ind., South Bend**—CLASSROOM—Trustees, Indiana University, Admin. Bldg., Bloomington, classroom bldg. at Indiana University Extension Center, $2,700,000.

Kan., Sublette—SCHOOL—Joint Rural High School Dist. 1 of Haskell Co., voted $725,000 bonds Apr. 17, high school. $800,000.

▲ **Kan., Wichita**—LIBRARY—University of Wichita, 1845 Fairmount, plans by John M. Hickman & Assoc., 2314 E. Central St., (Kan. 14-P 3014), library. $1,500,000.

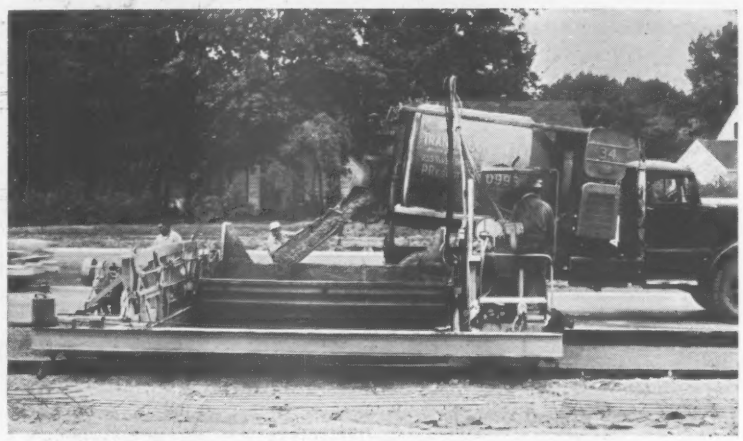
▲ **Ky., Lexington**—LIBRARY—Commonwealth of Ky., Div. Purchase, Frankfort, plans by John F. Wilson & Assocs., 508 E. Main St., library at University of Kentucky. $1,000,000.

▲ **Md., College Park**—DORMITORY, etc.—University of Maryland, College Park, plans by Johannes & Murray, 855 Pershing Dr., Silver Spring, dormitory, dining hall for men, $1,340,000; plans by Walton & Maddon, 3510 Rhode Island Ave., Mt. Ranier, Md., arts and sciences bldg. (Language Dpt.), $440,000, CD 7/11; student union addn., $1,500,000; Taliferro Hall addn., renovation, $500,000.

▲ **Md., Rockville**—SCHOOLS—Montgomery County Bd. Educ., Rockville, plans by Justement, Elam, Callmer & Kidd, 2011 K St. N.W., Wash., D. C., Wheaton High School, Wheaton, $1,091,000, CD 2/2/53; plans by William N. Denton, Jr., 1300 Connecticut Ave. N.W., Wash., D. C., Bethesda Elementary rehabilitation, Bethesda, $532,000; plans by Duane & Lawrence, 1726 M St. N.W., Wash., D. C., Gaithersburg Elementary rehabilitation, Gaithersburg, $550,000; plans by Cornelius R. Milstead, 1823 Jefferson Pl. N.W., Wash., D. C., Kensington Elementary, Kensington, $402,000; plans by Stanley H. Arthur, 7939 Norfolk Ave., Bethesda, Md., Travilah Elementary School, Rockville, $501,000; plans by Bailey & Patton, 200 Monroe St., Rockville, Md., West Rockville Junior Hight School, Rockville, $1,600,000; plans by Johannes & Murray, 855 Pershing Dr., Silver Spring, Md., Sligo Junior High School addn., Silver Spring, $492,000.

▲ **Mass., Braintree**—SCHOOLS—Town Supt. Schools, 10 Tremont St., plans by Rich & Tucker Assoc., 45 Newbury St., Boston, Junior High School, $1,000,000;

DUMPCRETE CONCRETE SPREADER WORKS FAST WITH TRUCK MIXERS FOR WIDENING AND STREET PAVING!



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high school addn., Washington St., $400,000. CD 2/10.

▲ Mass., Groton — SCHOOL — Groton-Harvard Regional School District, Groton, plans by Korslund, LeNormand and Quann, Inc., 506 Washington St., Norwood, Regional High School, Old Ayer Rd. $1,100,000. Constr. 1959.

Mass., Marblehead—SCHOOL—Town, Supt. Schools, Pleasant St., plans by Kilham, Hopkins, Greeley & Brodie, 9 Arlington St., Boston, high school addn. $600,000. CD 1/16/58.

▲ Mich., South Haven—SCHOOL—South Haven Bd. Educ., bond election June 8, 1 story, 125,000 sq. ft. high school. $2,160,000. Guido Binda & Assocs., 213 Capital N.E., Battle Creek, archts. CD 4/30.

Minn., Virginia—HEADQUARTERS—State Dpt. Admin., 19 State Capitol, St. Paul, district headquarters bldg. for Minnesota Dpt. Highways. $800,000. Constr. 1959.

Miss., Porte Gibson—PLANT—Bd. Supervs. Claiborn Co., bond election May 15, 41,000 sq. ft. plant. $800,000. Miss. Plastics, Inc., lessee.

▲ Mo., Mexico—HOUSING—City Housing Auth., City Hall, 160-unit public housing. $2,214,745.

▲ Mo., Warrensburg—DORMITORIES—Central Missouri State College (Mo. 23-CH-56D) men and women's dormitories. $1,210,000.

Neb., Lexington—SCHOOL—Bd. Educ., Lexington, bond election May 19, high school. $897,000. Clark & Emersen, 1415 Sharp Bldg., Lincoln, archts. CD 1/31.

▲ N. H., Nashua—HOUSING—City Housing Auth., Major Dr., plans by Dirsa & Lampron, 922 Elm St., Manchester, housing for elderly, $1,500,000. CD 10/23.

N. J., Pleasantville—SCHOOL—Linwood-Northfield & Somers Point Regional High School Bd., plans by Frederick P. Wiedersum Assocs., 238 W. State St., Trenton, Regional High School. Over $750,000. Bids soon.

▲ N. Y., Hoosick Falls—SCHOOL—Hoosick Falls Central School Dist., voted $2,440,000 bonds, school.

▲ N. Y., Melville (P. O. Huntington)—STATE CENTER—Dpt. P. Wks., State Office Bldg., Albany, state center for mentally retarded children on 50 acre tract at Northern State Parkway and Carman's Rd. $40,000,000. (Site officially selected by State).

▲ N. Y., Millbrook—SCHOOLS—Central School District, Franklin Ave., voted $2,100,000 bonds high school, Alden Pl. $1,600,000; elementary school, Elm Dr. $500,000.

N. Y., North Bellmore—SCHOOLS—Bd. Educ., 1602 Bellmore Ave., referendum vote June 6, Sawmill Rd. School addn. and Waltoffer Ave. School Addn. $800,000.

▲ O., Columbus—SCHOOLS—Columbus Bd. Educ., 270 E. State St., high school, Maize Rd. $1,700,000; high school, Wetstone Park, $1,300,000. CD 9/19/56.

▲† O., Miamisburg—RESEARCH and PRODUCTION ADDNS., etc.—Atomic Energy Comn., Germantown, Md., research and production addns., utilities, Mound Laboratory. $4,715,000. Monsanto Chemical Co. is operator. Girdler Constr., Div. Chemetron Corp., 840 N. Michigan, Chicago, Ill., consult. engrs. CD 9/17.

▲ O., Willoughby—SCHOOLS—Willoughby-Eastlake Bd. Educ., 4284 Center St., South High School addn. $900,000; Willowick Junior High School addn. $750,000. CD 4/16/57.

▲† Okla., Clinton — HOUSING — Procurement Office, Clinton-Sherman Air Force Base, Clinton, plans by Hudgins, Thompson, Ball & Assocs., 1411 Classen Blvd., Oklahoma City, 300 unit Capehart Housing, Clinton-Sherman Air Force Base No. 3. $4,950,000.

Okla., Pawhuska—ELECTRIC PLANT—City, City Hall, voted bonds Aor. 28, extensions to electric plant and distribution sys. $750,000. C. H. Guernsey & Co., 2701 North Oklahoma, Oklahoma City, consult. engrs. CD 4/17.

Okla., Tallequah—DORMITORIES—State of Oklahoma, Oklahoma City, 132 capacity men's dormitory, Okla. 34-CH-20D, $475,000; 132 capacity women's dormitory, Okla. 34-CH-20D; $521,000, North Eastern State College. CD 4/29/54.

▲ Ore., Corvallis — MEMORIAL UNION, etc. — State Bd. Educ., University of Oregon, Eugene, memorial union addn., $1,525,000; 315-student dormitory and cafeteria, $1,835,000; 311-student dormitory, $1,150,000, Oregon State College.

Ore., Monmouth—STUDENT CENTER AND COMMONS—State Bd. Educ., University of Oregon, Eugene, student center and commons, Oregon College of Education, $975,000.

▲ Ore., Portland — COLLEGE CENTER — State Bd. Higher Educ., University of Oregon, Eugene, college center addn., at Portland State College, $1,475,000.

Pa., Altoona—SCHOOL—Altoona School Dist., elementary school. $546,000.

▲ Pa., Chester—HOUSING—Chester Housing Auth., 330 unit housing. $5,500,000. CD 10/15/45.

Pa., Fort Washington—SCHOOL—Upper Dublin Twp. School Dist., elementary school. $588,000.

▲ Pa., Gallitzin—SCHOOLS—Greater Gallitzin Jt. School Dist., elementary-secondary school addns., alterations, $830,000; elementary bldg., $420,000.

▲ Pa., Harrisburg—HOUSING—Harrisburg Housing Auth., City Hall, plans by C. J. Lappley, Riverview Manor Aoartments, two 14 story public housing aoartments, 6th, Fulton, Verbeke and Wallace Sts. $3,500,000. Bids soon. CD 10/3/56.

▲ Pa., Morrisdale, R.D. — SCHOOL — Cooper-Morris-Graham-Karthaus Jt. School Dist., high school. $2,042,500.

(Continued on page 84)

Only Gardner-Denver offers 6 crawler drills for your choice

Swing Boom "Air Trac"® (Model ATD3000)—drills more holes from one position . . . reaches out to 2½′ on both sides of track for a total reach from side to side of 11′10″ with boom at 45° elevation . . . drills horizontal holes to 9′6″ above ground level. Like all "Air Trac" models, it is self-equalizing, self-stabilizing . . . moves safely, easily over rough terrain.

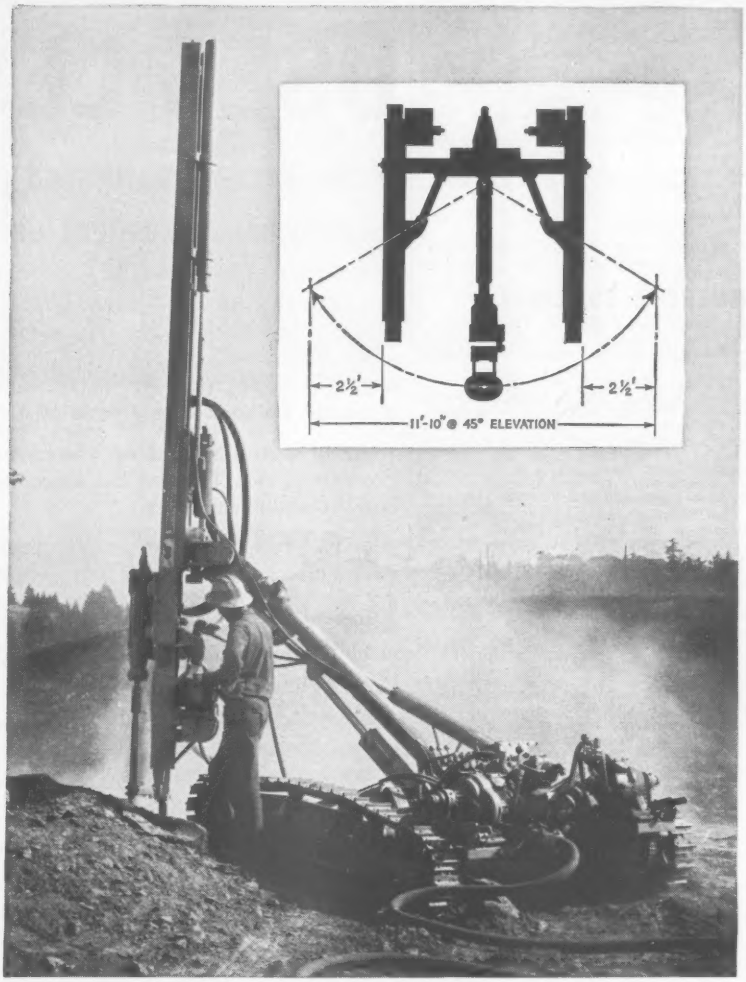
"Air Trac" (Model AT)—the first crawler drill . . . the carrier that made the wagon drill obsolete . . . still the only rig designed to level itself when riding over rough, rocky ground.

Model AT50—"Air Trac" with hydraulic drill positioner and hydraulic remote controls.

Model AT1000—with longer tracks and heavy-duty traction air motors for greater stability in severe terrain.

Model AT1500—like AT1000, has longer tracks and greater traction power. Designed for complete power positioning with hydraulic drill positioner and hydraulic remote controls.

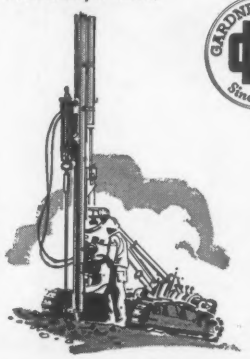
Model HT-143—biggest and most powerful crawler drill available . . . carries the hard-hitting Gardner-Denver 5½″ drill.



Plus . . . the most complete line of field-proved drifter drills available . . . and quality, longer lasting Gardner-Denver sectional drill rods, couplings, and ring seal shanks.
Write for bulletin.

SETTING THE PACE

The trend to crawler drills in recent years was pioneered by forward-looking engineers and construction specialists who developed the Gardner-Denver "Air Trac," another example of Gardner-Denver's 100-year philosophy of growth—*there's no substitute for men.*



GARDNER-DENVER Since 1859 — 100 1959 YEARS

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

(Continued from page 82)

▲ **S. C., Rock Hill**—HOSPITAL—York Co., Court House, voted bonds Apr. 28, hospital. $1,000,000. CD 4/2.

Tenn., Nashville—OFFICE, etc.—State Bldg. Comn., Nashville, plans by Marr & Holman, Stahlman Bldg., and Clayton Dekle, c/o owner, state archt., office and supply bldg, 5th Ave. N. $800,000.

Tenn., Selmar—HOSPITAL—McNairy County, Selmar, 49-bed county hospital. $900,000.

▲ **Tex., Abernathy**—SCHOOL—Abernathy Ind. School Dist., elementary school $550,000; high school $450,000.

Tex., Kerrville—SCHOOL—Kerrville Independent School Dist., high school unit, $500,000; elementary school, $400,000. Noonan, Thompson & Krocker, 2002 N. St. Mary's St., San Antonio, consult. engrs.

▲ **Tex., Panhandle**—SCHOOL—Panhandle Ind. School Dist. voted bonds May 2, high school $645,000, public school bldgs. $705,000. Brasher, Spencer & Goyette, 2118-34th St., Lubbock, archts. CD 4/30.

▲ **Utah, Salt Lake City**—SCHOOLS—Granite School Dist., 3212 S. State St., approved bond election Apr. 28, two year levy of ten mills to raise $2,870,000, and approved issuance of $3,500,000 in bonds for school constr. other funds will come from exist. levies and direct grant of State Aid of about $2,500,000. CD 4/2.

Que., Montmagny—COLLEGE—School Bd. of Montmagny, college. Over $500,000.

Que., Montreal—SCHOOL—Montreal Catholic School Comn., 3737 Sherbrooke St. E., high school, Eadie St $850,000.

COMMERCIAL BUILDINGS

▲ **Ala., Phenix City**—SHOPPING CENTER—Greater Phenix City Development Corp., c/o Biggers-Scarborough-Neal, Columbus, Ga., shopping center. $1,000,000.

Ala., Talladega—RESIDENTIAL SUBDIVISION—George W. Jones, Talladega, Dellwood Estates Residential Subdivision. $750,000. Sherlock, Smith & Adams, 303 Washington Ave., Montgomery, consult. engrs.

▲ **Calif., Oakland**—HOTEL, etc.—Sheraton Hotel Corp. of America, c/o Ned Dixey, consult. engr., 470 Atlanta Ave., Boston, Mass., plans by Martin Stern Jr., 8325 Wilshire Blvd., Los Angeles, hotel, swimming pool, 3600 Broadway. $7,000,000. CD 1/30.

Calif., San Francisco—HEADQUARTERS—San Francisco Lighthouse for the Blind, 745 Buchanan, plans by William Mooser, 681 Market St., headquarters, Bush and Divisadero Sts. $500,000.

Colo., Denver—MEDICAL ARTS—Owner, c/o James H. Johnson, archt., 9190 West Colfax, 4 story, bsmnt., Mile High Medical Arts Bldg. near St. Luke's Hospital. $600,000.

▲ **Conn., Meriden**—STORE—Grand Union Co., 100 Broadway, East Paterson, N. J., 2 story, 130,000 sq. ft. store E. Main St. $1,000,000.

▲ **Conn., Vernon**—HOUSES—U. & R. Housing Corp., 615 Main St., Manchester, 63 houses, "Hillside Manor" Main St. $1,039,500.

▲ **Del., Wilmington**—APARTMENTS—E. J. Frankel, 2201 Penna. Ave., Parkway Apartments., Phila., Pa., plans by Morton E. Bleich, 321 Delaware Ave., 72 unit apartments, Gilpin Ave. $1,500,000. Bids soon.

▲ **Fla., Daytona Beach**—HOTEL—Owner, c/o Melvin Grossman, archt., Mercantile Bank Bldg., Miami Beach, 4 story RIC hotel, incl. air-conditioning, Hy. A1A, Convention Hall. $2,500,000. Henry J. Nelson, 1101 Lincoln Rd., Miami Beach, mech. engr. Bliss Assocs., 1370 Washington Ave., Miami Beach, structural engrs.

Fla., Orlando—MOTEL—Thorton E. Round, 424 Magnolia Ave., c/o Wyoming Hotel, plans by Melvin Grossman, Mercantile Bank Bldg., Miami Beach, 2 story, RIC motel, swimming pool. $600,000.

Fla., Pensacola—RESIDENTIAL SUBDIVISION—Chapman Constr. Co., 721 S. Oates St., Dothan, Ala., Sherwood Residential Subdivision. $750,000. Shelby Sanders Assocs., Brent Bldg., consult. engrs.

▲ **Ill., Aurora**—HOTEL—Hilton Hotels Corp., 720 S. Michigan Ave., Chicago, Zone 5, plans by Frazier Raftery Orr & Fairbank, 315 James St., Geneva, 1 story, 300-room, brick, stone hotel. $2,000,000.

▲ **Iowa, Sioux City**—SUPERMARKET, etc.—Auditorium Shopping, Inc., c/o Mark Krueger, 314 Francis Bldg., supermarket, department store, hotel, etc., and parking areas, between Pierce, Jackson and 2 Sts. and Gordon Dr. $4,000,000.

Mass., Wellesley—TEMPLE—Temple Beth Elohim, c/o Charles Prombain, 22 Clifford St., temple on 8 acre site. $800,000. Constr. 1959.

▲ **Mich., Grand Rapids**—HOSPITAL—Blodgett Memorial Hospital, 1840 Wealthy St. S.E., Zone 6, plans by Lewis J. Sarvis, 258 Champion, Battle Creek, hospital addn. $1,500,000.

▲ **Mo., Overland (St. Louis 14, P. O.)**—SHOPPING CENTER—Thomas J. White Development Co., 1695 S. Brentwood Blvd., Brentwood, Zone 17, 200,000 sq. ft. shopping center incl. 2000 car-ground parking, Woodson Rd. $3,500,000-$4,000,000.

▲ **Mont., Billings**—STORE, etc.—Yale Realty Co., c/o Orr Pickering & Assocs., archts., Fratt Bldg., 5 story, bsmnt., rein.-con. frame, store and office approx. $1,000,000.

▲ **Mont., Great Falls**—HOSPITAL—Montana Deaconess Hospital, 1109 6th Ave. N., 10 story 200-bed hospital. $3,530,625.

▲ **N. J., Jersey City**—APARTMENTS, etc.—Marion Realty Co., Charles Shilowitz, archt., 26 Journal Sq., plans by Raymond & Rado, 101 Park Ave., New York, N. Y., two 23 story apartments, $6,000,000; shopping

PRESTRESSED CONCRETE REPORT

TEXCRETE USES LESCHEN

Huge Texas prestressed plant finds Leschen Strand has "Excellent uniformity of quality"

In just four short years, Texcrete Structural Products Company has become a key factor in the tremendous building program now under way in North Texas. Its Dallas plant is geared to produce yearly more than 3,000,000 sq. ft. of channels in various sizes, over 1,000,000 sq. ft. of double T's, as well as precast joists and pretensioned girders.

One of a growing number who have learned to depend on *Leschen Prestress Strand*, Texcrete has welcomed the advice and assistance of Leschen strand engineers.

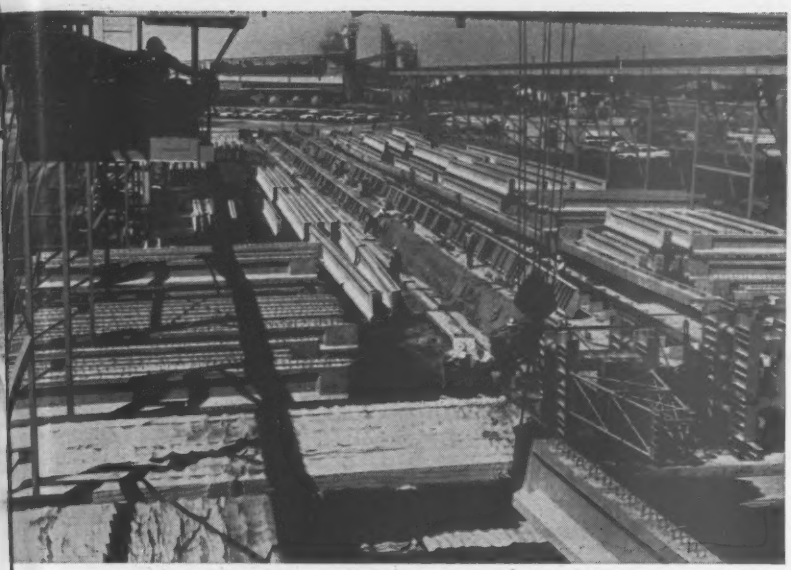
In prestressed concrete, unvarying quality—where every foot of strand matches every other foot—is essential. At Leschen, this exacting standard is made possible by a new continuous-flow technique in today's most thoroughly modern wire mill. Here new processes, new machines, new methods maintain standards and quality that meet or beat the industry's specifications.

If you would like to talk with a Leschen engineer or receive complete specifications and other helpful information, write today to *Leschen Wire Rope Division, H. K. Porter Company, Inc., St. Louis 12, Mo.*

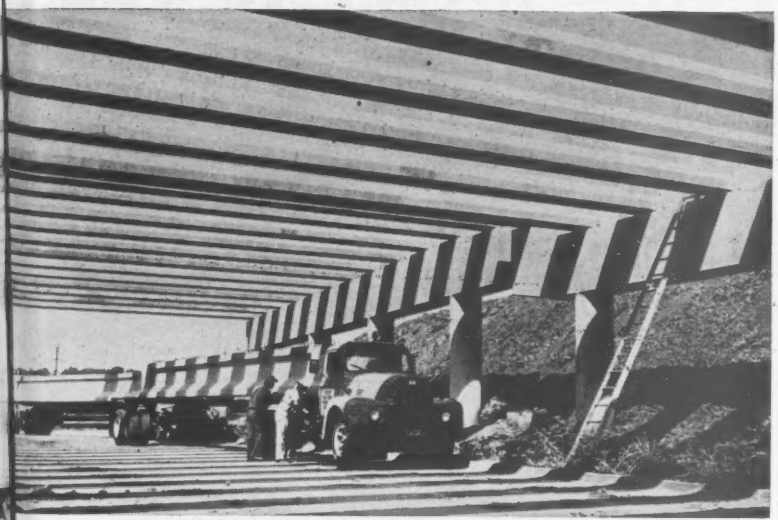
LESCHEN
PRESTRESS STRAND

Says Jean F. Devine, Texcrete's Vice President and General Manager, (*left*), "In my experience, Leschen Prestress Strand has excellent uniformity of quality." With Mr. Devine are other key personnel: (*left to right*) James F. Evans, Chief Engineer; Frank Horn, Prestressing Plant Supt.; Fred Veckert, Erection Supt.; and Zane P. Laurini, Plant Supt.

PORTER
DELTA-ST
DIVISION;
KIDD STEE
ROPE DIVI



View of Texcrete's Dallas Plant showing storage area, 410-foot casting bed and 440-foot casting bed. Overhead cranes, 96' clear span with 20-ton capacity each. Production is on Texas Type A and B Bridge Beams with block ends.



Texas Type B girders, 34" deep x 45' long, on Stemmons Expressway, Dallas. Two trailer trucks pulled into position, loaded with girders for next section. Strand used was Leschen 3/8" Prestress Strand.

LESCHEN WIRE PORTER ROPE DIVISION

H.K. PORTER COMPANY, INC.

PORTER SERVES INDUSTRY: with Rubber and Friction Products—THERMOID DIVISION; Electrical Equipment—DELTA-STAR ELECTRIC DIVISION, NATIONAL ELECTRIC DIVISION; Copper and Alloys—RIVERSIDE-ALLOY METAL DIVISION; Refractories—REFRACTORIES DIVISION; Electric Furnace Steel—CONNORS STEEL DIVISION, VULCAN-KIDD STEEL DIVISION; Fabricated Products—DISSTON DIVISION, FORGE AND FITTINGS DIVISION, LESCHEN WIRE ROPE DIVISION, MOULDINGS DIVISION; and in Canada, Refractories, "Disston" Tools, "Federal" Wires and Cables, "Nepcoduct" Systems—H. K. PORTER COMPANY (CANADA) LTD.

center, Hudson Blvd., Cottage St., $1,000,000. Michael I. Portnow & Assocs., 177 Oakwood Ave., South Orange, consult. engrs.

▲ **N. J., Newark**—APARTMENT—United States Realty & Ins. Co., 972 Broad St., plans by William Lehman, 972 Broad St., 15 story, apartment, Broad and Court Sts. $7,000,000.

▲ **N. J., Perth Amboy** — APARTMENT — Edward O. Wickberg, 274 Front St., 8 story apartment with mariana, Water St. $2,000,000. Walter M. Oliver, 71 Catalpa Ave., consult. engr.

▲ **N. Y., Brooklyn**—APARTMENT—Atlantic Towers, 2781 Ocean Ave., Zone 29, plans by George C. Miller, 125 W. 45th St., New York, Zone 19, 6 story apartment, 2546-64 Sheepshead Bay Rd. $1,000,000.

N. Y., Brooklyn—APARTMENT—Ocean Towers, Inc., 2 Chester St., Zone 12, plans by Morris Rothstein & Son. 186 Joralemon St., Zone 2, 6 story apartment, incl. 30-car garage, 820 Ocean Parkway. $600,000.

N. Y., New York—APARTMENT—Gross-November Corp., 527 Lexington Ave., Zone 17, plans by Kokkins & Lyras, 111 E. 38th St., Zone 16, apartment, 403 E. 56 St. $500,000.

▲ **N. Y., New York**—MOTOR HOTEL—Edwards Management Co., 12 John St., Zone 7, plans by S. J. Kessler, 551 Fifth Ave., Zone 17, Aristocrat Motor Hotel and 300-car garage, 12 Avenue between 42 and 43 Sts. $1,000,000.

N. Y., New York—APARTMENT, etc.—Ostric Corp., 370 Lexington Ave., Zone 17, plans by H. I. Feldman, 415 Lexington Ave., Zone 17, 6 story apartment and stores, 22-32 W. 14th St. and 25-31 W. 13th St. $727,600.

▲ **N. Y., New York**—APARTMENT—Joseph Sager, 116 E. 36th St., Zone 16, plans by Greenberg & Ames, 303 Fourth Ave., Zone 10, apartment, 201 E. 66 St. $1,500,000.

▲ **Pa., Doylestown**—RESIDENTIAL DEVELOPMENT—Mrs. Curtis Jones, c/o Parke M. Wetherill, Doylestown, residential development, E. Court St., etc. $2,500,000.

▲ **Pa., Paoli**—RESIDENTIAL DEVELOPMENT—Harry A. Doyle, c/o Schorsch & Wilson, 1903 Walnut St., Phila., residential development (800) East Goshen Twp., 847 acre. $20,000,000.

▲ **Pa., Penn Square**—MARKET—Bargain City, U.S.A., 2210 Walnut St., 150,000 sq. ft., masonry, steel market, Germantown Pike. $1,250,000.

▲ **Pa., Phila.** — HOSPITAL — Germantown Hospital, E. Penn and Wister Sts., plans by Howell Lewis Shay & Assocs., and Paul M. Hesser Jr., Packard Bldg., hospital addn. $1,250,000.

Pa., Phila.—STUDENT DORMITORY—University of Penna., 3025 Walnut St., plans by Esbach, Pullinger, Stevens & Bruder, 1519 Walnut St., Graduate Student Dormitory. $500,000. CD 10/14/46.

Pa., Pittsburgh—CLINIC—Mercy Hospital, Stevenson and Locust Sts., steel, brick medical diagnostic clinic, 100-car parking garage. $700,000.

Tenn., Memphis—MOTEL—Downtowner Motor Hotel, 160 Union Ave., plans by Windrom, Haglund & Venable, Hotel Chisca, 4 story, bsmnt. motel addn., 800 sq. ft. swimming pool. $500,000.

▲ **Tex., Corpus Christi**—MOTOR HOTEL—Owner, c/o A. Art Williams, archt., 817 Austin St., Waco, 160-room, concrete, steel luxury motor hotel, swimming pool, $1,650,000; hard-pavement area and auto center, $92,500, North shoreline.

▲ **Tex., Dallas**—SHOPPING CENTER—Northlake Development Corp., 1802 S. Buckner Blvd. David Bruton, plans by William & Reeves, 6501 Hillcrest St., shopping center, $1,500,000; area and auto parking center paving, $91,000; area site earth work, $61,000; sanitary storm water lines combination $150,000. Ferndale Rd. and N. E. Highway.

Tex., Fort Worth—SHOPPING CENTER—Wedgwood Investment Co., 6000 Trail Lake Dr., plans by Temple D. Waller, 800 Abrams St., Arlington, 1 story, 60,000 sq. ft., brick, tile, concrete, steel shopping center, Trail Lake Dr. and S-W Loop, $600,000.

▲ **Tex., Houston**—DWELLINGS—Canterbury Village, c/o D. H. Canterbury & Jno. B. Brown, Developers-Builders, 1201 Almeda-Genoa Sts. 31 dwellings $409,150, 26 dwellings $416,000, 34 dwellings $425,000, last of Section 1; shopping center "Canterbury" Subdivision, $500,000.

▲ **Tex., Houston**—DWELLINGS—Pacesetter Homes, Inc., 6535 Richwood St., 28 dwellings $588,000; 18 dwellings $440,000; 22 dwellings $431,500; 25 dwellings $424,100; 12 dwellings $420,000; 15 dwellings $412,300, Meyerland Meadows.

▲ **Tex., Port Arthur**—MOTEL, etc.—Corp., c/o H. H. Poole, City Hall, 100 unit motel, recreation center, 32 lane bowling center, swimming pool. $1,400,000, area and vehicle center hard paving $95,000. State Hy. 347 and Houston Shortline Loop 8½ acre tract. Constr. June.

Wash., Tacoma—CHURCH—First Christian Church, 6 Ave. and S. K St., plans by S. E. Nelson, 2715 Center St., four 1 and 2 story church bldgs., 6th Ave. and N. Orchard St. $500,000. Bids this summer.

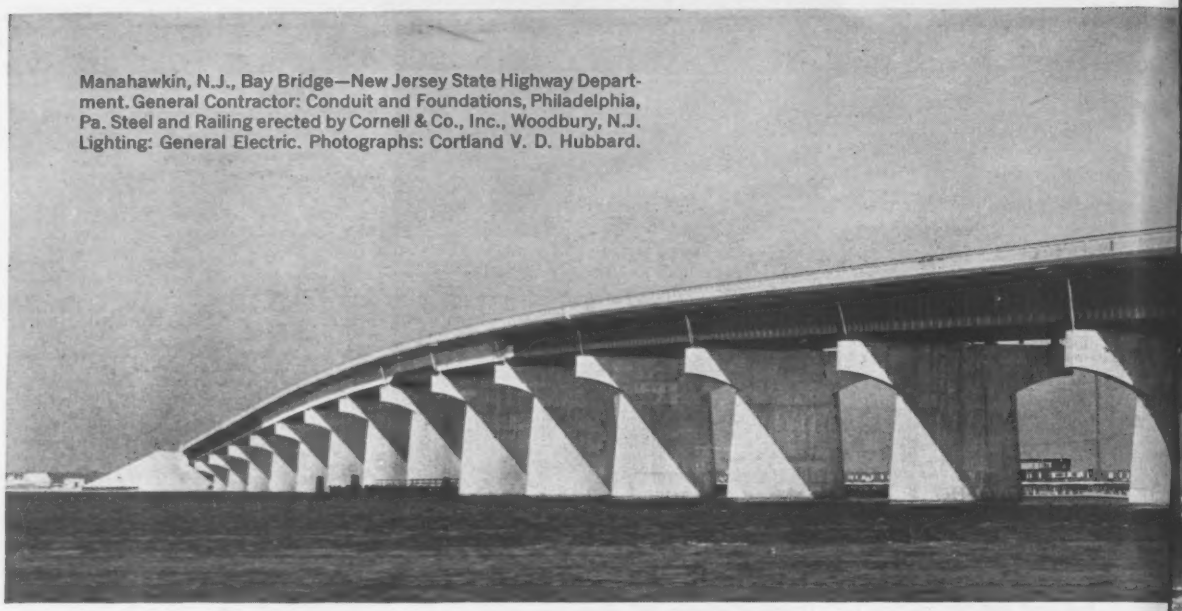
▲ **W. Va., Huntington**—OFFICE—Chesapeake & Ohio Railway Co., T. F. Burris, ch. engr., Equipment Depot, office, $10,000,000.

▲ **Wis., Appleton**—MOTEL, etc.—Holiday Inn, 2 Craig Ave., Madison, 104 unit motel, swimming pool, restaurant. $1,000,000.

Wis., Milwaukee—SCHOOL—St. Sebastian Catholic Congregation, 5400 W. Washington St., plans by Brust & Brust, 135 W. Wells St., Zone 3, 2 story school. $825,000.

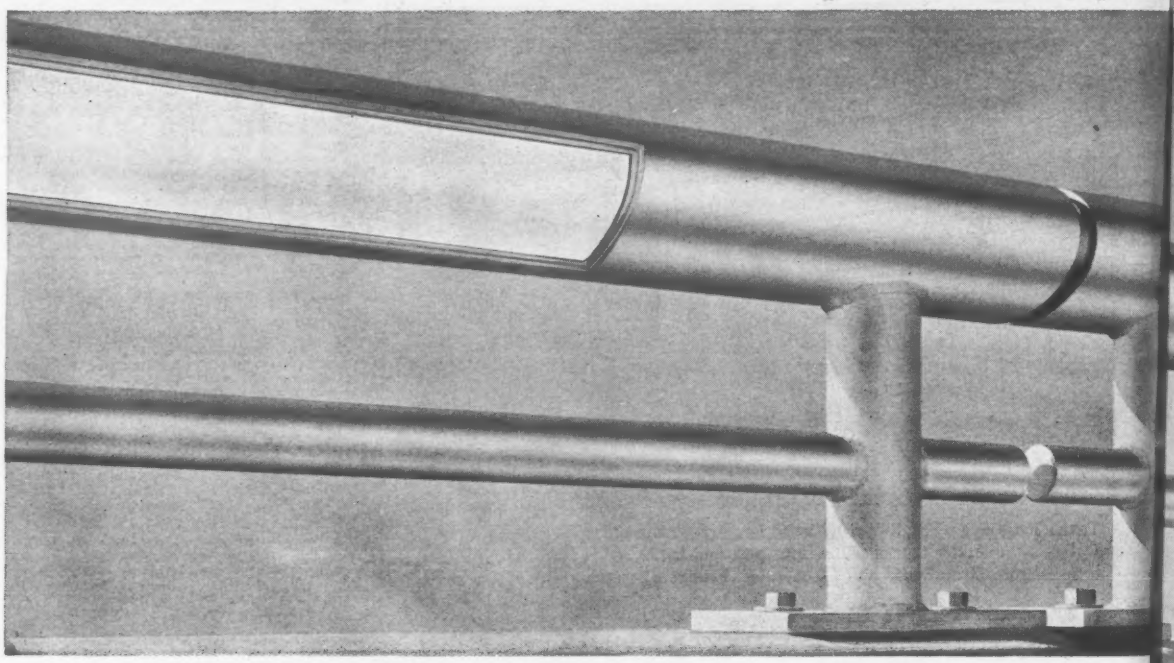
▲ **Alta., Edmonton**—SPORTS CENTER—Glenora Skating & Tennis Club, 10137 120 St., Edmonton, plans

(Continued on page 89)



Manahawkin, N.J., Bay Bridge—New Jersey State Highway Department. General Contractor: Conduit and Foundations, Philadelphia, Pa. Steel and Railing erected by Cornell & Co., Inc., Woodbury, N.J. Lighting: General Electric. Photographs: Cortland V. D. Hubbard.

2400 FEET OF BRIDGE . . . 4800



To provide for luminaire lighting, the engineers of Manahawkin, N. J., Bay Bridge—in conjunction with General Electric—worked out the special design for the bridge railing shown above.

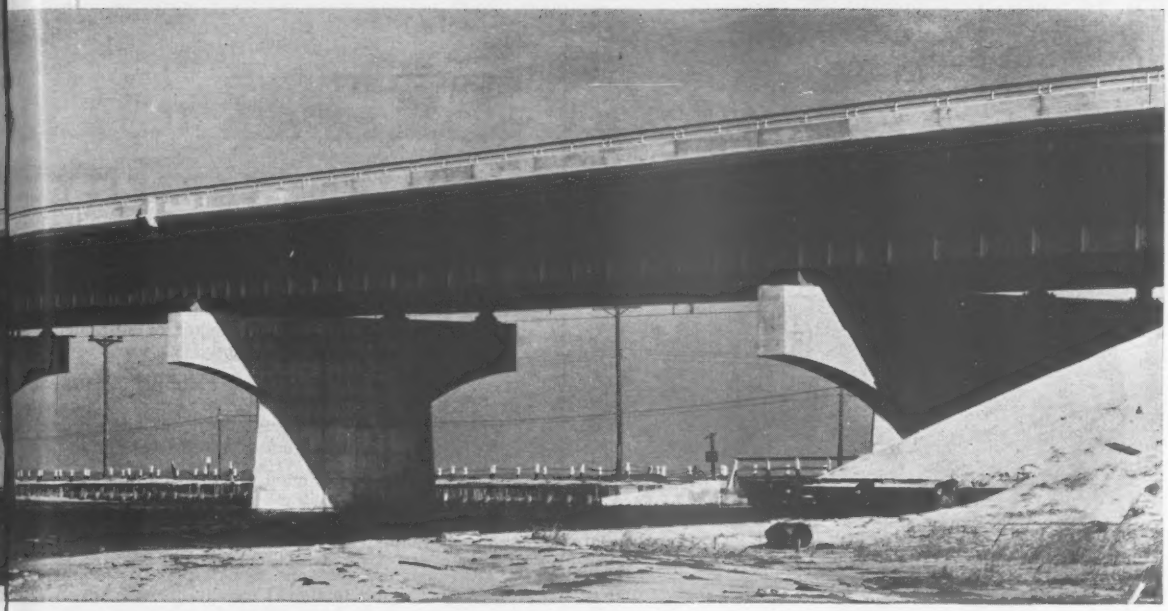
And Michael Flynn—in strict accordance with specifications—supplied the extruded aluminum railings, posts, and base plates. Later these were welded into easily manageable units which could be handled and installed with minimum labor.

The ability to turn out material for special designs is one advantage Flynn offers you. For many jobs, however, where post and rail jobs are desired, you can save money by choosing from Flynn's great variety of functional, attractive *standard* designs.

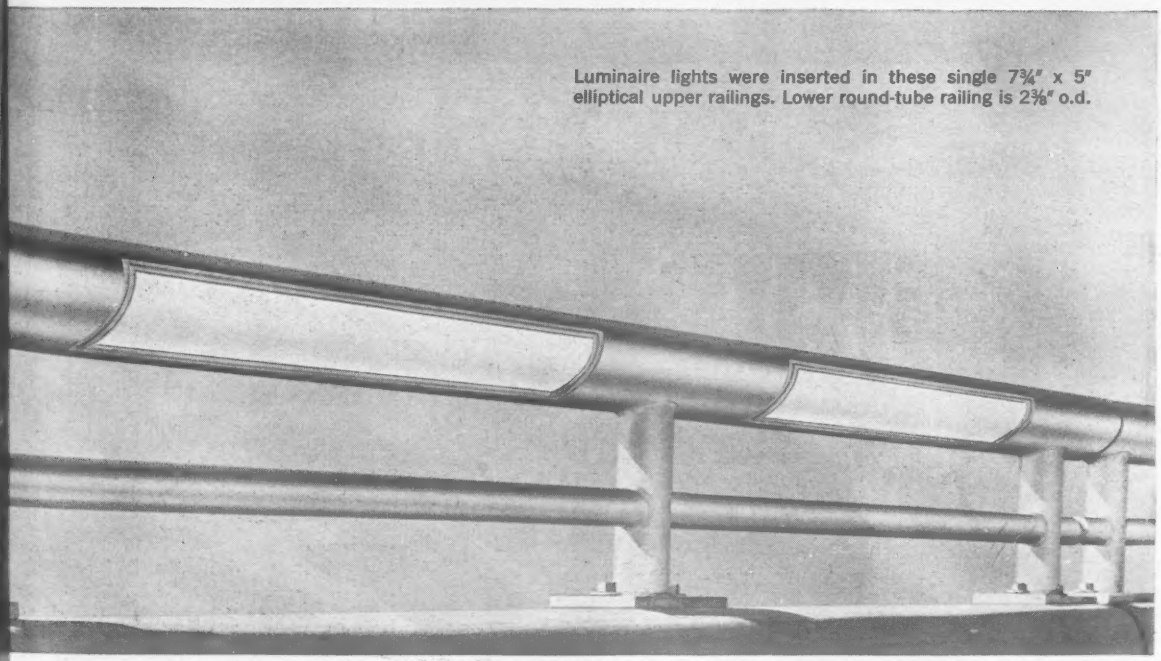
Also you can depend on Flynn to deliver aluminum railing and components direct to the job site, ready for fast, easy installation . . . on time, in the quantities specified.

What's more, no overmanned crews, no lift trucks, no cranes are needed on Flynn installations. Two men, with wrenches as their principal tools, can install the lightweight Flynn bridge railings shown here. (With other Flynn railings, one man can often do the job alone.)

And because Flynn bridge railing is non-rusting aluminum, it never needs painting. It's so tough and durable, nothing short of an accident can make replacement necessary.



FEET OF FLYNN BRIDGE RAILING



Luminaire lights were inserted in these single 7¾" x 5" elliptical upper railings. Lower round-tube railing is 2⅜" o.d.

For help in your own projects, send for a free copy of Flynn's new bridge railing catalog. Write on your own letterhead to Michael Flynn Manufacturing Company's main office.

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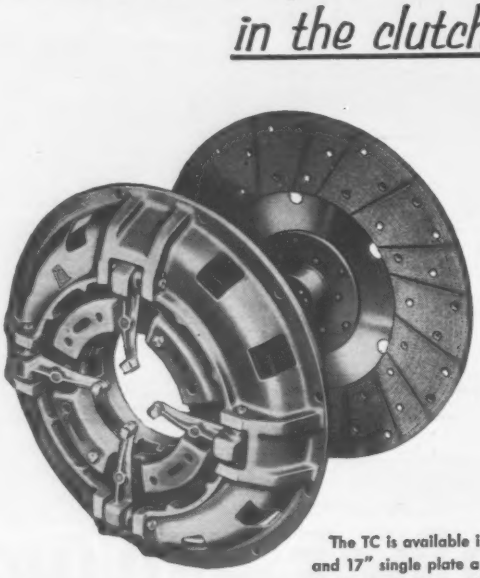
For sustained performance in the clutch...



The TC is available in 15½" and 17" single plate and double plate sizes with torque capacity ratings from 400 to 4000 ft. lbs.

LIPE TC

CONSTANT CAPACITY CLUTCH

Full torque capacity for the entire life of the friction material! That is the secret of sustained performance in the tough, rugged TC.

A non-adjustable, spring loaded, dry-plate clutch, the TC compensates for fading pressure of expanding springs . . . never loses torque capacity while there is a reasonable amount of friction material left.

The massive plate, finned for rapid radiation and cooled by effective currents of air, accounts for the TC's high thermal capacity, extending life of friction material.

Both manufacturers and owners of heavy equipment are turning to the TC for its proved advantages: Easier on driveline components . . . less down-time . . . longer life . . . lower overall cost per hour of operation.

Call on Lipe Engineers for detailed recommendations based on your vehicle specifications. Write, wire or phone.

(Continued from page 85)

by Rule, Wynn & Rule, 11422 Jasper Ave., sports center, incl. 85x200 ft. (covered) skating rink, 60x86 ft. swimming pool, curling and badminton facilities. $1,250,000.

▲ Ont., Toronto—SHOPPING CENTER—Cloverdale Shopping Centre, Ltd., c/o Bregman & Hamann, archts., 146 Bloor St. W., 2nd phase of Cloverdale Mall Shopping Centre, incl. 235,000 sq. ft. extension, 2 story, 135,000 sq. ft. department store for Henry Morgan & Co. Ltd., NE corner of Hy. 5 and Hy. No. 27, $5,000,000. Max Roth, 1015 Sherbrooke St. W., Montreal 18, Que., assoc. archt.

▲ Ont., Toronto—OFFICE—Syndicate, c/o Consolidated Building Corp. Ltd., John D. Fienberg, pres., 89 Avenue Rd., plans by Wilfred Shulman, 1173 Bay St., 12 story 250,000 sq. ft. concrete, aluminum and glass office, Yonge and Victoria Sts., $25,000,000.

INDUSTRIAL BUILDINGS

▲ Ala., Butler—PLANT—Marathon Southern Corp., Naheola, paper products plant addn., Naheola, $9,000,000.

Ark., Russellville—PLANT—Arkla Air Conditioning Corp., (subsidiary Arkansas-Louisiana Gas Co.), 300 W. Capitol St., Little Rock, masonry, steel, concrete mfg. plant, 33 acre tract. $500,000.

▲ California—POWER PLANT—Pacific Gas & Electric Co., 245 Market St., San Francisco, 82,000 kw. Stanislaus Power Plant with semi outdoor plant, penstock pipe and switchyard, 2,000 ft. concrete afterbay dam. $10,700,000, applied to FPC for permission to build.

▲ Calif., San Diego—PARKING GARAGE—Bert Fisher, c/o Stiles & Robert Clements, archts, 210 7th St., Los Angeles, parking garage. $1,400,000.

Colo., Pueblo—PRESS—Pueblo Star-Journal & Chieftan, 211 W. Fifth, 1 story, press bldg. $600,000.

Conn., Killingly—WAREHOUSE—Danielson Development Corp., Town Hall, 127 Main St., Danielson, 53,000 sq. ft. warehouse, $530,000. Knox Glass Inc., lessee.

▲ Conn., Old Saybrook—PLANT—R. R. Donnelley & Sons Co., 350 E. 22 St., Chicago, Ill., plans by Naess & Murphy, 244 S. Michigan Ave., Chicago, Ill., printing plant, School House Lane, $2,250,000. CD 2/12.

▲ Fla., Tampa—PLANT—Thatcher Glass Manufacturing Co., Inc., 100 Pollock St., Elmira, N. Y., 170,000 sq. ft. glass container mfg. plant, incl. furnace bldg., packing bldg., warehouse, office and shop in Tampa Industrial Park, near here. $3,500,000.

▲ Ind., Speed—Mill—Louisville Cement Co., cement finishing mill. $1,000,000. Bids about Aug. 15.

▲ Mass., Waltham—PLANT—Clevite Corp., 243 Crescent St., transistor manufacturing plant, Rte. 128. $3,000,000. Constr. 1959.

▲ N. Y., Staten Island—PRINTING PLANT—Staten Island Advance, 1267 Castleton Ave., plans by William Ginsberg Assocs., 331 Madison Ave., New York, N. Y., 2 story, 50,000 sq. ft. printing plant, Fingerboard Rd. between Parkinson and Glendale Aves. $2,000,000.

▲ O., Cleveland—FURNACE, etc.—Jones & Laughlin Steel Corp., 401 Liberty Ave., Pittsburgh, Pa. 2nd basic oxygen furnace, 110 ft. high blast furnace. $60,000,000.

O., Willoughby — PLANT — DiNoc Chemical Arts, Inc., 1700 London Rd. Cleveland, Zone 12, plans by Syl Schmidt & Assocs., Engineers Bldg., St. Louis, Mo., film plant $600,000. Bids about June.

▲ Pa., Paoli—INDUSTRIAL PARK—Clarence S. Staats, Malvern, plans by Wallace & Warner, Lancaster and Martin Aves., Bryn Mawr, industrial park. $5,000,000.

▲ Pa., Phila.—WAREHOUSE—Sun Ray Drug Store Co., 49th St. and Lancaster Ave., plans by Sabatino & Fishman, 116 S. 19th St., warehouse, Penrose Ave. $3,000,000.

▲ Tex., Freeport—PLANT, etc.—E. J. Lavino & Co., 3 Penn Center Plaza, Phila., Pa., magnesite production plant. $3,000,000; water sys. $60,000.

▲ B. C., Kimberly—PLANT—Consolidated Mining & Smelting Co. of Canada Ltd., Kimberly. First Phase, sintering and furnace feed plant, electric furnace; Second Phase, 2nd furnace, oxygen blown-converters for producing steel ingots, fabricating plant. $20,000,000. CD 10/16/51.

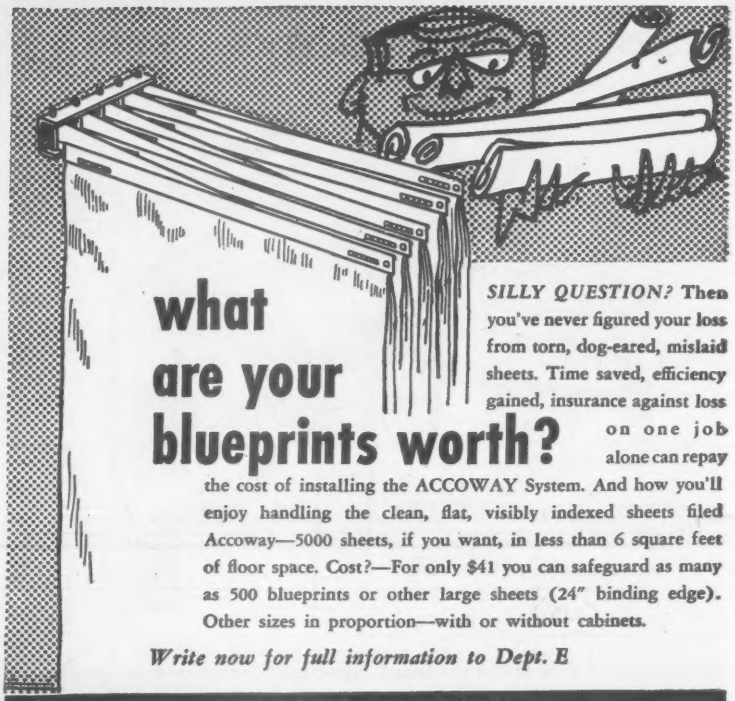
UNCLASSIFIED

Ala., Birmingham—RADIO-TV TOWER, etc.—Alabama Broadcasting System, Radio Park, Red Mt., Birmingham, 842 ft. radio-TV tower, switching system, housing for equipment at WAPI-TV. $500,000.

▲ Ala., Birmingham — STADIUM — Park & Recreation Bd., City Hall, Legion Field stadium addn. $2,000,000.

▲ Calif., San Francisco — TRANSIT SYSTEM — San Francisco Bay Area Rapid Transit Comn., 1182 Market St., rapid transit sys. for Alameda, Contra Costa, Marin, San Francisco and San Mateo Counties. $700,000,000. A bond election will be held. Parsons-Brinckerhoff-Tudor-Bechtel (Parsons, Brinckerhoff, Hall & Macdonald, 833 Market St., The Bechtel Corp., 155 Sansom St. and Tudor Engineering Co., 595 Mission St., all San Francisco) consult. engrs. CD 1/9/56.

▲ Pennsylvania — GAS PIPE LINE — Manufacturers Light & Heat Co., Inc., Union Trust Bldg., Pittsburgh, 20 in. gas pipe line 700 hp. compressor station in Franklin, Fulton, Bedford, Somerset, Fayette and Green Counties. $5,380,000. FPC authorized.



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CONSTRUCTION REPORTS

Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
June 1 Connecticut
STREETS AND ROADS
May 26 Massachusetts June 1 Connecticut

HEAVY CONSTRUCTION—LB & CA

▲ MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Bids opened 5/12, Campanella & Cardi Constr. Co., 780 Jefferson Blvd., Warwick, R. I., LB $4,935,546, est. $5,814,500, Interstate Hy. W95, incl. 8 bridges. FA 1-W95-6(10)68 Contr. "B", Chelmsford and Lowell. CD 4/21.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
May 27 Delaware
STREETS AND ROADS
May 27 Delaware, New Jersey June 3 New Jersey
June 5, 12 Pennsylvania

▲† N. Y., Niagara Falls—SPECIAL FACILITIES—BA 5/27—U. S. Eng., 111 E. 16th St., New York, Zone 3, special facilities, Niagara Falls Air Force Base, ENG-30-075-59-190. $5,000,000. Extended date. CD 4/7.

BUILDINGS—BA

▲ Pa., Latrobe—SCHOOL—BA 6/4—Pa. P. School Bldg. Auth., 101 S. 25th St., Harrisburg, 40 room Senior High School for Derry Area Jt. School Bd., Proj. 800-586. $1,950,000. Plans deposit $100. Sorber & Hoone, Bank Bldg., Greensburg, archts. CD 6/16.

▲† D. C. Wash.—MEDICAL SERVICE SCHOOL—BA On Or About 6/23—U. S. Eng., 1st and Douglas Sts. N.W., Zone 25, Army Medical Service Graduate School, Walter Reed Army Medical Center, ENG-49-080-59-48-(50). CD 4/8.

HEAVY CONSTRUCTION—LB & CA

▲ Nager Electric Co., Inc. & Gustave Hirsch Organization, 426 Broadway, Brooklyn, N.Y., LB $4,594,020, electrical work at Niagara Switchyard in Lewiston, Niagara Co. Spec. No. PA-N-25033, Niagara Contr. NP 11, NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N.Y. Bids May 12. CD 4/8.

▲ Horn Constr. Co., Inc., 2174 Hewlett Ave., Merrick, N.Y., LB $1,788,800, reconstr. wharf and dredging on North side, inshore end of City Channel, Bldgs. 293, 294, and 295, Contr. PN-510.003, PORT NEWARK, N.J., The Port of New York Auth., Rm. 1100, 111 Eighth Ave., New York 11, N.Y. Bids May 12. CD 4/16.

BUILDINGS—LB & CA

▲ Reisinger Bros., Inc., Box 516, Carlisle, Pa., CA $1,603,440, general contract JUNIOR-SENIOR HIGH SCHOOL for Lower Dauphin Jt. School Dist., HUMMELSTON, PA. Pa. Pub. School Bldg. Auth., 101 25th St., Harrisburg, Pa. Bids Apr. 7. CD 4/13, under LB.

▲ 808 17 St. N. W. Associates, Wash., D. C., Owner Builds, $5,000,000, OFFICE, 808 17 St. N. W., WASH., D. C. Vlastimil Koubek, 810 18 St. N. W., Wash., D. C., archt. Henry Dollar & Assocs., 2000 K St. N. W., Wash., D. C., mech. and electrical engrs. Farkas & Barron, 5 Beekman St., New York, N. Y., structural engrs.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
May 29 Kentucky June 3 Virginia
STREETS AND ROADS
May 28, June 7 Louisiana May 29 Kentucky
June 3 Virginia

▲† Va., Fort Belvoir—HANGAR, etc.—BA About 6/16—U. S. Eng., 1st and Douglas Sts. N. W., Wash. D. C., 130 ft. x 159 ft. and 40 ft. high, hangar, 2 story with 150 ft. long, 25 ft. wide shops, access apron and facilities, aircraft parking apron, ENG-49-080-59-60(57) and ENG-49-080-59-61(58). Thos. B. Bourne & Assocs., Inc., Dupont Circle Bldg., Wash., D. C., archt. CD 2/6/58.

▲† Fla., Pensacola—BERTHING FACILITY—BA 6/23—Dist. P. Wks. Office, Sixth Naval Dist., Bldg. No. 13, U.S. Naval Base, Charleston, S.C., 24 x 786 ft. rein.-con. pier, open type, 2 rein.-con. mooring platforms, 25 x 30 ft. concrete catwalks, two 70 ft. mooring camels, two 50 ft. long aluminum brows with two 10 ft. high towers, electrical and mechanical work, berthing facility for Aircraft Carriers, U.S. Naval Air

(Continued on page 92)

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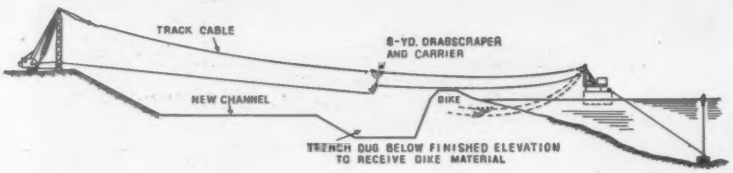

Atlas Construction Co. Ltd., Montreal, Que., had the job of enlarging the St. Lawrence Seaway channel near Iroquois, Ont. An 8-yd. Sauerman Crescent DragScraper and four-wheeled carrier was used with a crane to remove the perimeter dikes composed of tough digging glacial till and to backfill the trenches.

The hoisting line of the crane, used as a track cable for the Crescent and carrier, ran through a block on the boom tip to a 25-ft. tail tower mounted on a 20 x 40-ft. barge. The structural steel spud mast used to support the boom was pin-connected to facilitate movement of the crane.

After inhauling to the trench, the 8-yd. Crescent was gravity-returned part of the way to the excavation. A single-drum hoist mounted on the barge tail tower controlled the backhaul cable used to complete the return cycle. The job was handled by two operators, one on the crane and the other on the barge. The operating span varied from 600 to 900 ft. Average DragScraper hauls were 300 to 600 ft.

This is a typical example of how a crane can handle a Crescent DragScraper of greater capacity than the original dragline bucket or clamshell. Larger machines can usually double their capacity with a DragScraper. Smaller units can handle about 50% more. Machine range is limited only by the spooling capacity of the hoist drums. It can reach farther, dig deeper under water and take material out of soft areas without the nuisance of mats and the hazard of undermining the crane.

DragScraper traveling down track cable on return to underwater dike. Barge is in background.

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(Continued from page 90)

Station, NBy 984, Spec. 984/57. Over $1,000,000. CD 9/17/57.

HEAVY CONSTRUCTION—LB & CA

▲ **William Muirhead Constr. Co.**, E. Trinity Ave., Extension, Durham, N.C., LB $2,919,016, sewage treatment plant, GREENSBORO, N.C. City, City Hall, Greensboro, N.C. Bids May 8. CD 4/1.

▲ **Lock Joint Pipe Co.**, 150 Rutledge Ave., East Orange, N. J., CA $1,992,996, furnish 77,559 ft. 48 in. pipe for water line, GREENVILLE, S. C. City, City Hall, Greenville, S. C. Bids Apr. 28. CD 4/8.

BUILDINGS—LB & CA

▲ **Bernstein Bros.**, c/o Vlastimil Koubek, archt., 810 18th St. N.W., Wash., D. C., Owner Builds, $1,300,000, 9 story, 100-unit APARTMENT, Troy, Taft and 13 Sts. off Rte. 50, ARLINGTON, VA. Henry Dollar & Assocs., 2000 K St. N.W., Wash., D. C., structural engr. Enis Y. Baskam, 7 W. Marie, Hicksville, N. Y., structural engr.

▲ **McDevitt & Street Co.**, Builders Bldg., Charlotte, N.C., LB $1,694,800, APARTMENTS for married students, RALEIGH, N.C. North Carolina State College, Raleigh, N.C. Bids Apr. 30. CD 4/3.

▲ **A. C. Samford, Inc.**, 630 S. Slappey Dr., Albany, Ga., CA $4,196,196, Anderson Memorial HOSPITAL addn., ANDERSON, S.C., Anderson County, Anderson, S.C. Bids May 5. CD 5/12, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
May 28 Indiana

BUILDINGS—BA

▲ **O., Akron**—SCHOOL—BA 6/5—Springfield Local School Dist., Sanitarium and Canton Rds., Howard G. Schrop Junior High School, Pickel Rd. $1,280,000. Plans deposit $25. W. B. Huff & Assoc., 1050 N. Main St., archts. CD 1/14.

BUILDINGS—SLC

▲ **Ill., Chicago**—COMMUNITY CENTER—Jewish Community Center, 32 W. Randolph St., soon lets contract community center, swimming pool, Tuohy and Sacramento Aves. $1,500,000. A. Epstein & Sons, Inc., 2011 W. Pershing Rd., archts. CD 9/11.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., Columbus,
O.—**Shelly & Sands, Inc.**, Thornville, O., CA $685,802, grading, draining, paving 3.482 mi. and continuous concrete slab bridge with capped pile substructure (spans 34 ft. 42.5 ft. 34 ft.., roadway 44 ft.), Bridge No. JAC-75-0140 over Black Fork Creek, Jefferson Twp. and village of Oak Hill. S.R. 75, Section 0.29, F-421(5), Jackson Co.;
O.—**V. N. Holderman & Sons, Inc.**, 890 Oakland Park Ave., Columbus, O., CA $1,458,561, c. conc. paving 6.296 mi. and continuous steel beam bridge with concrete deck and capped pile substructure (spans 44 ft. 55 ft. 44 ft., roadway 44 ft.), Bridge No. LOG-33-0641 over Great Miami River; continuous steel beam bridge with concrete deck and capped pile substructure (spans 34 ft. 42.5 ft. 34 ft., roadway 44 ft.), Bridge No. LOG-33-0696 over Cherokee Creek; continuous concrete slab bridge with capped pile substructure (spans 30 ft. 37.5 ft. 30 ft., roadway 44 ft.), Bridge No. LOG-33-0888 over Cherokee Creek; grade separation with New York Central R.R. consisting continuous concrete slab bridge with concrete substructure (spans 44 ft. 55 ft. 44 ft., roadway 44 ft. between parapets), Bridge No. LOG-33-1069 over New York Central R.R. Villages of Russells Point and Huntsville and in Washington and McArthur Twps. US R 33, Section 5.85, F-FG-67(5), Logan Co. Bids Mar. 28. CD 5/5, under LB.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield,
Ill.—**Paulumbo Excavating Co.**, 2738 West Harrison, Chicago 12, Ill., CA $1,182,637, paving 0.5 mi. F.A.I. Rte. 90, Congress St. Expressway between Ridgeland Ave. and Austin Glvd. in Oak Park, Cook Co., Bids Apr. 24, awarded May 8, CD 5/8, under LB;
Ill.—**E. T. Simonds Constr. Co.**, P.O. Box 353, Carbondale, Ill., and **J. D. Barter Constr. Co.**, 215 S. Jackson St., Harrisburg, Ill., CA $1,311,613, wid'n. 5 mi. base course and 13 mi. resurf. 5 mi. US 51, Marion Co.;
Ill.—**Skokie Valley Asphalt Co.**, 1228 Harding, Des Plaines, Ill., CA $672,193, base course wid'n. US 45 from State line southerly, Lake Co.;
Ill.—**Eaton Asphalt Co., Inc.**, P.O. Box 111, Normal, Ill., CA $534,683, base course and wid'n. US 51 near Kappa, McLean and Woodford Counties;
Ill.—**Triangle Constr. Co.**, 480 N. Evergreen St., Kankakee, Ill., CA $555,940, resurf. 1.21 mi. Ill. 37 in West Frankfort, Franklin Co., CD 4/29, under LB. Grand total $4,257,066.

▲† **Blount Bros. Constr. Co.**, 79 Commerce, Montgomery, Ala., CA $2,757,000 (8 bidders) bomarc missile facility, Raco Auxiliary Field, RACO, MICH. U. S. Eng., 1101 Washington Blvd., Detroit 31, Mich. CD 3/31, under Mich., Kinross.

▲ **R. E. Dailey & Co.**, 21675 Telegraph, Detroit 19, Mich., LB $1,448,396, Livonia Drain No. 1, Section 1, City of Livonia, DETROIT, MICH. Drainage Bd. for Livonia Drain No. 1 at Bd. Wayne Co. Auditor's, Bd. Rm. 1222, City-County Bldg., Detroit, Mich. Bids Apr. 14. CD 3/19;

(Continued on page 94)

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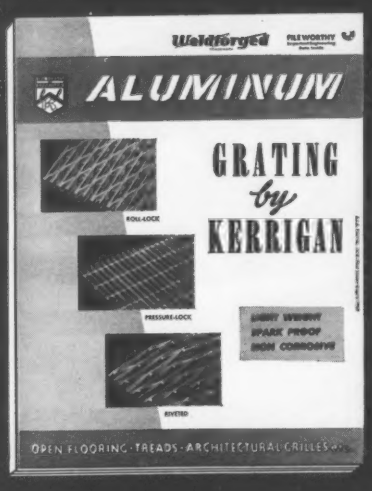

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(Continued from page 92)

Fattore Co., Inc., 6400 Eleven Mile, Warren, Mich., LB $998,716, Livonia Drain No. 1, Section 2, City of Livonia (Detroit, Mich.);
Greenfield Constr. Co., 16596 Greenfield, Detroit 35, Mich., LB $2,062,142, Livonia Drain No. 1, Section 3, City of Livonia (Detroit, Mich.);
Northeast Constr. Co., 4105 Townsend, Detroit 14, Mich., LB $1,268,700, Livonia Drain No. 1, Section 4, City of Livonia (Detroit, Mich.).

BUILDINGS—LB & CA

▲ **John Jacobson Constr. Co.**, 1044 N. Main St., Akron, O., CA $1,754,581, 87 bed HOSPITAL WING, BARBERTON, O. Citizens Hospital, 155 5th St., Barberton, O. Dan Carmichael, 6 E. Long St., Columbus, O., archt. CD 7/9.

▲ **Fred Johnson**, 946 Irving Rd., Dayton, O., Owner Builds, $1,450,000, 95 brick veneer HOUSES, near Daley and Compton Rds., CINCINNATI, O. Edw. Niemeier, 4484 Harrison, Cincinnati, O., engr.

▲ **R. W. Setterlin & Sons Co.**, 2000 Kenny Rd., Columbus, O., CA Est. $1,300,000, 153-unit MOTEL and RESTAURANT, W. Broad St. and Georgesville Rd., COLUMBUS, O. Nationwide Development Corp., 246 N. High St., Columbus, O.

▲ **Murphy Builders, Inc.**, 7945 Hamilton Ave., Cincinnati, O., Owner Builds, $1,500,000, 72 HOUSES, off Paddison Rd., CINCINNATI, O. Edw. Niemeier, 4484 Harrison Ave., Cincinnati, O., engr. CD 5/28.

▲ **R. W. Norris**, 3159 Harrison, Cincinnati, O., Owner Builds, $1,890,000, 90 one fl., bsmnt., brick HOUSES, North Glen Ave. near Bridgetown Rd., CINCINNATI, O. Edw. Niemeier, 4484 Harrison, Cincinnati, O., engr. CD 10/28.

▲ **Knowlton Constr. Co.**, Bellefontaine, O., CA Est. $2,500,000, Hill and Dales SHOPPING CENTER, Rte. 25 and Dorothy Lane, DAYTON, O. Columbia Bldg. Co., 1459 King St., Columbus, O.

▲ **A. Mourek & Sons**, 3128 S. Austin Ave., Cicero, Ill., CA $1,500,000, 1 and 2 story, 440 x 500 ft. steel frame FACTORY and OFFICE, 5020 W. 73 St., Bedford Park, CHICAGO, ILL. Young Spring & Wire Co., 6601 S. Oak Park Ave., Chicago, Ill. Edward S. Busche, 5407 W. Addison St., Chicago, Ill., archt.

▲ **Mercury Bldrs., Inc.**, 761 S. Harlem Ave., Forest Park, Ill., LB $1,664,000, David Gottlieb Memorial HOSPITAL, MELROSE PARK, ILL. West Towns Hospital Assn., 6743 W. North Ave., Oak Park, Ill. Bids May 5. CD 4/23.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
June 4 Kansas

BUILDINGS—BA

▲ **Tex., Houston**—HOSPITAL—BA 6/3—City, City Hall, and Harris County, Courthouse, Jefferson Davis Hospital remodeling, addns. $1,500,000-$2,000,000. Finn, Maddox & Johnson, 1005 Bankers Mtg. Bldg., archts. CD 5/26/54.

▲ **Neb., Lincoln**—EDUCATION CENTER—BA About 6/5—University of Nebraska, 12th and R Sts., Nebraska Center for Continuing Education. $2,650,000. Plans deposit $100. Selmer A. Solheim Co., 1335 H St., archts.-engrs. Welton Becket & Assocs., 5657 Wilshire Blvd., Los Angeles, Calif., consult. archts. W. D. Treadway, 1010 S. Robertson Blvd., Los Angeles, Calif., structural engr. Samuel R. Lewis & Assocs., 407 S. Dearborn St., Chicago, Ill., mechanical engrs. CD 2/27.

▲ **Minn., St. Paul**—HOSPITAL—BA 6/16—Bethesda Hospital, Capitol Blvd. and Charles St., 6 story, plus 2 story lobby, 12x70 ft. hospital addn. $1,500,000. Magney, Setter, Leach, Lindstrom & Erickson, 303 Roanoke Bldg., Minneapolis, archts. CD 9/23/57.

▲ **Tex., Dallas**—MOTOR HOTEL, etc.—Bids Asked—Hot Shoppes, Inc., J. Willard Marriott, pres., 5161 River Rd., Bethesda, Md., or c/o Harold A. Berry, archt., 422 S. Field St., Dallas, 300 room motor hotel, $2,750,000; area and auto parking center paving, $100,000. CD 5/13.

HEAVY CONSTRUCTION—LB & CA

▲ **MINNESOTA**—State Hy. Dpt., 1246 University Ave., St. Paul. Bids opened 5/8,
Minn.—Brown & Leguil, Route 1, Mankato, Minn., LB $1,071,883, (6 bidders), sand-grav. sub-base, grav. base, road-mixed bit. base 3.6 mi. in and near North Mankato, Nicollet Co.;
Minn.—McLean-Astleford, 7701 Harriet Ave., Minneapolis, Minn., LB $1,441,490, (7 bidders), grade, sand-grav. sub-base grav. base, road mixed bit. base and bridges, 1.5 mi. in and near South St. Paul, Dakota Co.;
Minn.—Megarry Bros., 437 33rd Ave. N, St. Cloud, Minn., LB $738,482, (9 bidders), sand-grav. sub-base, grav. base, concrete pavement 8 mi. near Clara City, Chippewa Co. CD 4/22.

BUILDINGS—LB & CA

▲† **D & L Constr. Co. & Assocs.**, 13238 Sherman Way, North Hollywood, Calif., LB $10,625,000, (3 bidders), 700 units Capehart HOUSING, ENG-23-028-59-61, FORT LEONARD WOOD, MO. U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids May 7. CD 5/5, under LB.

(Continued on page 96)

"Nothing pulls you through tough scrapes like TORQMATIC DRIVE"

Hit a particularly tough stretch of grading and you'll quickly discover what TORQMATIC DRIVE means in a scraper.

For that's when TORQMATIC's precision-power control pays off. The operator feeds just the power he needs, whether he's humping the blade or bucking his way through a hardpan cut.

It keeps your scrapers on the job, too. For the power-transmitting oil in a TORQMATIC soaks up stresses and strains that could mean trouble. The pay-off: eye-opening records for the fewest repairs, least maintenance and highest availability of any construction equipment around.

It's easy to see what that means to TORQMATIC users. Time after time, they're the outfits that land the biggest, most profitable contracts – simply because they can do better, faster jobs for less.

And remember – TORQMATIC DRIVE is available in most types and makes of construction equipment. For the full story, see your equipment dealer or write:

Allison Division of General Motors, Indianapolis 6, Indiana
In Canada, GENERAL MOTORS DIESEL LIMITED, London, Ontario

Allison TORQMATIC

TORQMATIC® DRIVES

THE MODERN DRIVE FOR MODERN EQUIPMENT

NEW PORTABLE PAVEMENT DRILL BY ACKER

SPEEDS HIGHWAY CORE TESTING

65 CORES A DAY WITH HIGH SPEED ACKER DIAMOND BIT

- Full 360° angle drilling
- Hydraulically operated leveling jacks
- Adjustable core barrel guide
- Integral pump and 100 gallon water tank

In routine operation, Acker's new highway test core drill using special Acker thin-wall diamond bits is producing 65 or more quality test cores per 8 hour shift.

Trailer mounted for portability, this new rig features a 100 gallon water tank and pump; a new built-in core barrel guide that saves time; hydraulic leveling jacks that simultaneously level the rig regardless of road contour; and dozens of valuable, exclusive features.

Write today for Bulletin 32. ENR

ACKER DRILL CO., Inc. P.O. BOX 830 SCRANTON 2, PA.

Over 40 years of experience manufacturing a complete line of diamond and shot core drills, accessories and equipment.

Jaeger pumps know how to handle water

Two independent, simultaneous priming actions . . . fast and doubly sure. • Oversize shells and impellers, engines of largest horsepower applicable. • The only positively lubricated shaft seal with ready inspection port. • Prime without racing, pump at slower speeds, pump more thousands of hours. Performance guaranteed. Sizes 1½" to 10". See your Jaeger dealer or send for Catalog

THE JAEGER MACHINE COMPANY • 200 Dublin Ave., Columbus 16, Ohio

COMPRESSORS • MIXERS • TRUCK MIXERS • SPREADERS • FINISHERS

(Continued from page 94)

FAR WEST

STATE HIGHWAY LETTINGS
BRIDGES
June 10, 11 California
STREETS AND ROADS
May 28 Nevada June 10, 11, 17 California

▲† Oregon—BA 6/3—U. S. Eng., 628 Pittock Block, Portland, Cougar Dam, CIVENG-35-026-59-170. Extended date. CD 3/26.

▲† Ariz., Yuma—RUNWAY—BA 6/16—P. Wks. Officer, 11th Naval Dist., 1220 Pacific Hy., San Diego, Calif., runway and taxiway, Marine Corps, Auxiliary Air Station, Spec. 19477-58, $6,000,000. CD 9/11.

HEAVY CONSTRUCTION—LB & CA

▲ OREGON—State Highway Comn., Highway Bldg., Salem, Bids opened 5/5,

Ore.—**C. R. O'Neil,** Rte. 2, Box 95, Creswell, Ore., LB $588,321 (15 bidders) 5.08 mi. grading and paving Oregon-Washington Hy., FAP F-170 (14) Umatilla Co. LB $381,305 (14 bidders) 3.8 mi. grading, paving Weston-Elgin Highway FAP S-76 (4), Umatilla Co.;

Ore.—**R. A. Heintz Constr. Co.,** 211 N.E. Columbia Blvd., Portland, Ore., LB $1,854,672 (8 bidders) 4.19 mi. grading, Pacific Hy., FAIP I-5-4 (25)-193 105-4 (12) 195 and FAP S-145 (6), Lane Co.;

Ore.—**Roy L. Houck Sons Corp.,** 1585 N. 20 St., Salem, Ore., LB $1,718,220 (9 bidders) 12.52 mi. paving Pacific Highway, FAIP I-5-4 (30) 204, Linn Co. CD 4/24.

BUILDINGS—LB & CA

▲ **Graff & Jones,** Box 82 Medford, Ore., LB $2,874,000 (10 bidders), general contract 10 story, RETIREMENT HOME, MEDFORD, ORE. Rogue Valley Manor, Medford, Ore., Bids May 6, CD 4/9;
J. M. Harder Plumbing & Heating Co., 2148 NE Union Ave., Portland, Ore., LB $1,258,000 (5 bidders) mechanical work 10 story, retirement home (Medford, Ore.).

▲ **E. H. Moore & Sons, Inc.,** 693 Mission St., San Francisco, Calif., LB $1,617,000 (8 bidders), Base Bid, 1 story steel frame, concrete block HIGH SCHOOL, Irvington, FREMONT, CALIF. Washington Union High School, 415 S. Main St., Box 606, Fremont, Calif. Falk & Booth, 16 Beale St., San Francisco, Calif., archts. Bids May 7. CD 10/19/56.

▲ **Dalecrest Co.,** Box 609, Canoga Park, Calif., Owner Builds, $1,468,200, 102 stucco DWELLINGS, Platt, Birchton and Gross Aves., etc., VAN NUYS, CALIF. Duncan & Conroy, 13310 Moorpark St., Sherman Oaks, Calif., archts.

▲ **Doyle & Shields,** 831 S. Manchester Ave., Anaheim, Calif., CA $2,017,200, 193 frame, stucco DWELLINGS, WESTMINSTER, CALIF. Security Homes, 831 S. Manchester, Anaheim, Calif.

▲ **M. J. & L. Inc.,** 8501 Bolsa St., Midway City, Calif., Owner Builds, $5,612,000, 488 stucco DWELLINGS, Eden St., WESTMINSTER, CALIF.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
May 26 British Columbia June 24, July 8 Ontario
STREETS AND ROADS
June 10, 17, 24, July 8, 15 Ontario

BUILDINGS—LB & CA

▲ **Big Inch Pipe Corp. Ltd.,** Calgary, Alta., Owner Builds, $4,000,000, PIPE MILL, Ogden Dist., CALGARY, ALTA.

▲ **Smith Bros. & Wilson Ltd.,** 1267 Richards, Vancouver, B. C., CA $4,000,000, rein.-con. BREWERY, 3650 Loughee Highway, VANCOUVER, B. C. O'Keefe Brewing Co. (BC) Ltd., Vancouver, B. C. Mercer & Mercer, 675 W. Hastings, Vancouver, B. C., archts. Awarded May 6.

▲ **Leon M. Adler,** 2200 Ward Ave., St. Laurent, Montreal, Que., LB $1,779,800 (15 bidders), HIGH SCHOOL, Dudemaine, Olivier, Elie Blanchard Aves. and Edouard Montpetit Blvd., MONTREAL, QUE. Protestant Bd. of School Comrs. of Montreal, 3460 McTavish St., Montreal, Que. Bids May 6. CD 4/13.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

▲ **Cuba, Havanna**—Bids Asked—Oficinas Centrales del Ministerio de Obras Publicas, Calle Sel Fronte a la Calle Aquiar, Havanna, 24 m.g.p.d. water purification plant Santiago de Cuba Aqueduct, Tender 13. $4,000,000. Firms interested in bidding should express their interest before May 18. CD 11/13/53.

FOREIGN

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
Feb. 27 Portugal

▲ **Francesco Saverio Parisi,** Rome, Italy, CA $1,760,000, 42 kilometers Stanleyville-Bukavu Rd., BELGIAN CONGO. Government Belgian Congo, Leopoldville, Belgian Congo. CD 9/30.

(Proposal Advertisements see pp. 118 to 120)

Drill and tap a ¾" hole in three minutes!

use the power-operated MUELLER® *B-100 drilling, tapping and inserting machine*

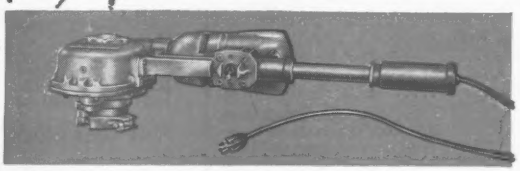
Reduce time and effort to a minimum on all of your service connection jobs by using the new Mueller B-100 Machine and Air or Electric Power Operator.

Drilling, tapping and withdrawing the tool is done quickly and easily with power. Tool feed, during the drilling operation, is automatic to insure fast, accurate cuts. Crowding of the tool is completely eliminated — greatly extending effective tool life.

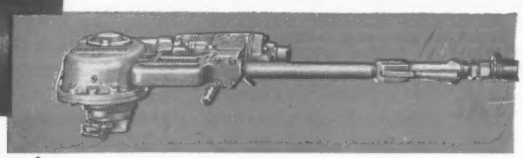
Either type of power operator attaches directly to the top of the boring bar *and* to the square shank on the top of the feed yoke. No adapters or conversion parts are needed — simply lift off the ratchet handle. Both power units are reversible.

The modern, new "B-100" is far ahead of any other tapping machine available. It is typical of the attention to detail in research, design and engineering that becomes a part of every Mueller product manufactured for the water industry.

Write for complete information.



H-603 ELECTRIC POWER OPERATOR
110-120 Volt A.C.-D.C.



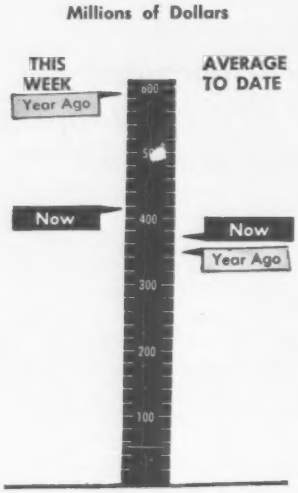
H-604 AIR POWER OPERATOR
90 p. s. i. pressure at full load

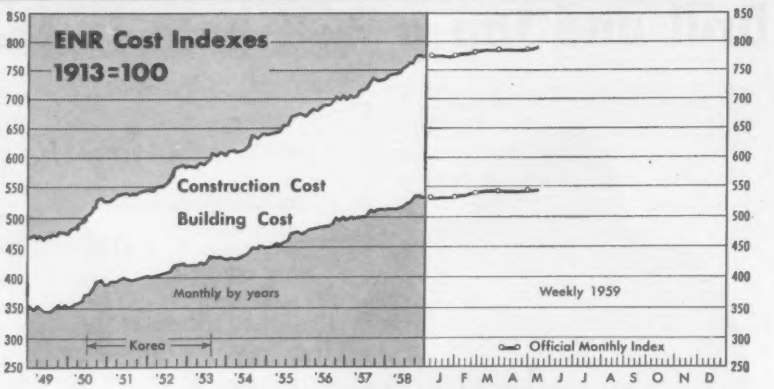
MUELLER CO. **DECATUR, ILL.**

Factories at: Decatur, Chattanooga, Los Angeles;
In Canada: Mueller, Limited, Sarnia, Ontario

Construction Scoreboard

CONTRACTS ...





AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 21 wks 1959	Chge '58-'59 %
	millions		
All Heavy Constr.	$468.2	$7,791.6	+ 7
PRIVATE	304.2	3,786.9	+12
PUBLIC	164.0	4,004.7	+ 2
State & Municipal	145.9	2,882.0	− 4
Federal	18.1	1,122.7	+21
By Type of Work			
PUBLIC			
Waterworks	21.7	186.1	+61
Sewerage	17.2	250.5	+12
Bridges*	8.3	234.3	+15
Highways	59.8	1,169.9	+ 1
Earthwork, Waterways	5.7	314.6	−19
Buildings, Excl. Housing	29.9	996.5	− 3
Housing	4.5	260.1	−31
Unclassified	17.0	592.8	+54
PRIVATE			
Buildings			
Mass Housing	108.2	1,636.6	+ 7
Commercial	72.9	920.3	+ 9
Industrial	119.9	1,071.9	+33
Unclassified	3.1	158.0	−18

*Includes private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

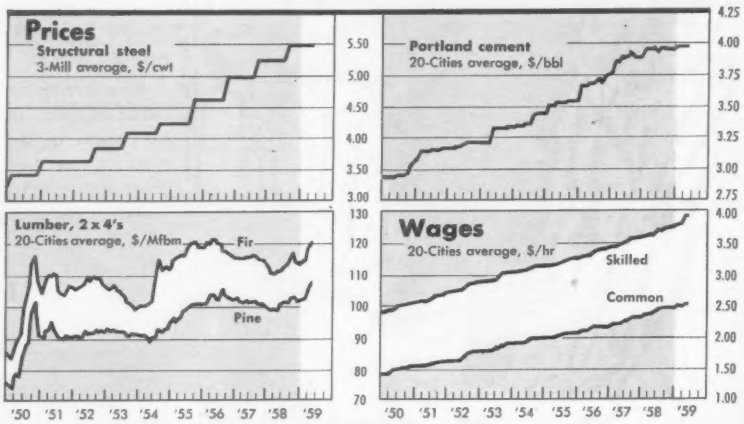
CAPITAL . . .

New Capital For Construction	Week of May 14	Cum. 20 wks 1959	Chge '58-'59 %
	millions		
Corporate Securities	$ 71.0	$1,412.8	−38
State and Municipal:			
All Except Housing	62.5	2,619.9	− 7
Housing	....	30.6	+51
Federal Loans	3.0	57.4	−22
Federal Aid	....	.....	....
Total Nonfederal	$136.5	$4,120.7	−20
Federal Appropriations:			
Projects in U. S.	....	.....	−100
Outside U. S.	....	.....	....
Total New Capital	$136.5	$4,120.7	−29

CURRENT COST INDEXES

ENR INDEXES (1913=100), 20-cities' average	Week of May 15 1959	% Change from Apr. 16 1959	% Change from May 15 1958
Construction Cost	794.50	+1.0	+5.2
Building Cost	547.28	+0.9	+5.4

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



ENR COST INDEXES IN 22 CITIES, 1913=100

City	Construction Cost May 1959	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost May 1959	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	594	0	+6.5	477	0	+4.6
Baltimore	711	0	+5.0	544	0	+3.8
Birmingham	624	0	+5.2	498	0	+4.4
Boston	830	+2.1	+4.8	556	+0.2	+5.9
Chicago	872	+0.5	+4.2	575	+0.9	+8.7
Cincinnati	790	+0.6	+5.9	529	+0.8	+5.4
Cleveland	913	+2.2	+7.5	544	+0.9	+5.6
Dallas	573	0	+3.6	474	+0.4	+3.3
Denver	742	+1.5	+2.3	528	−0.8	+1.0
Detroit	899	0	+5.3	581	0	+6.2
Kansas City	793	0	+4.1	548	0	+4.0
Los Angeles	839	+0.7	+3.1	547	+1.1	+7.0
Minneapolis	855	+1.9	+6.5	564	+1.8	+5.0
New Orleans	620	0	+6.0	496	0	+4.4
New York	972	+0.1	+6.5	633	+0.2	+6.2
Philadelphia	804	0	+3.7	583	0	+3.9
Pittsburgh	840	+1.6	+4.5	595	0	+4.6
St. Louis	881	+3.2	+4.9	580	+0.7	+3.9
San Francisco	824	+0.1	+8.1	545	+0.2	+7.5
Seattle	834	0	+5.7	493	−0.8*	+4.7
U. S.—20 Cities' average	790	+0.8	+5.1	544	+0.2	+4.8
Montreal	610	+1.2	+4.3	450	+0.2	+0.7
Toronto	649	0	+6.9	493	0	+4.9

* Due to Revision

One in a series of technical reports by Bower

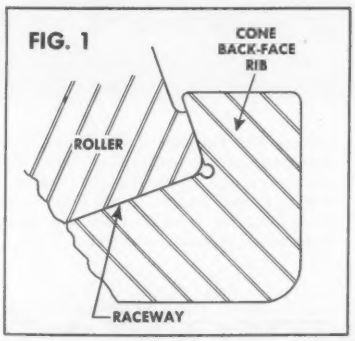
BEARING BRIEFINGS

BEARING GEOMETRY MAKES OR BREAKS BEARING PERFORMANCE

To develop high capacity and optimum performance in a tapered roller bearing, it is essential that roller alignment be accurate. Correct roller alignment, in turn, depends on a critical geometric relationship between the cone back-face rib, and the cone raceway.

Perfection in this geometric relationship compels the rollers to align themselves perfectly with respect to the bearing geometry, and each roller shares equally in the work that is imposed. Figure 1 diagrams the important elements involved.

When this rib-to-raceway relationship is incorrect (because of either faulty bearing design or manufacturing inaccuracies), rollers experience misalignment and begin to skid and skew under



load. As engineers know, poor performance and premature bearing failure are inevitable under these conditions.

In the design and manufacture of Bower tapered roller bearings, Bower engineers take great care to generate and hold an exact face angle on the cone back-face rib. In practice, this means that Bower

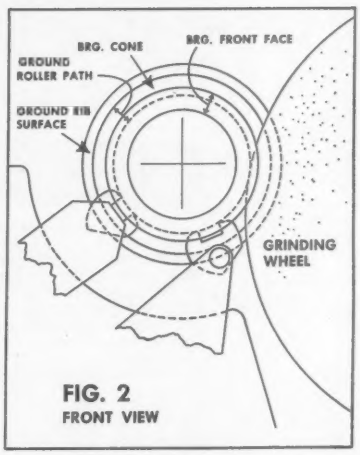
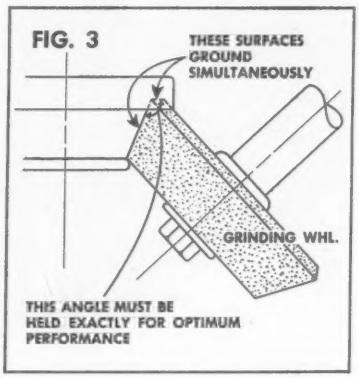


FIG. 2
FRONT VIEW

bearings are designed for maximum life and optimum performance under any operating conditions. It means that Bower bearings retain accurate roller alignment under all speeds and loads up to the maximum for which the bearing is rated.

It's one thing to develop proper bearing design on paper, but quite another to carry it out consistently in manufacture. To this end, Bower engineers were instrumental in the design and development of a unique centerless grinder on which Bower precision grinds each bearing's cone raceway and rib-face simultaneously. The results obtained from these machines invariably meet or surpass Bower's exacting requirements and assure perfect roller alignment.

Figures 2 and 3 are front and top views which illustrate Bower's technique of centerless grinding rib-faces and cone raceways together. As a result, every component in a Bower bearing is perfectly concentric about its rolling axis.



★ ★ ★ ★

When you require bearings, we suggest you consider the advantages of Bower bearings. Where product design calls for tapered or cylindrical roller bearings or journal roller assemblies, Bower can provide them in a full range of types and sizes. Bower engineers are always available, should you desire assistance or advice on bearing applications.

BOWER ROLLER BEARINGS

BOWER ROLLER BEARING DIVISION — FEDERAL-MOGUL-BOWER BEARINGS, INC., DETROIT 14, MICHIGAN

NEW INTERNAT

New look! New custom interiors!

Engineered with more than style in mind, this INTERNATIONAL pickup combines ruggedness and ability! Choose from two body types—extra-wide, extra-capacity "Bonus Load" or standard (as shown). Low-to-ground design makes for convenient load accessibility. Reinforced with box-type construction and all-steel ribbed floor, these are among the toughest pickup bodies in the business. INTERNATIONAL gives you everything for comfort, from new instrument panel to accelerator pedal!

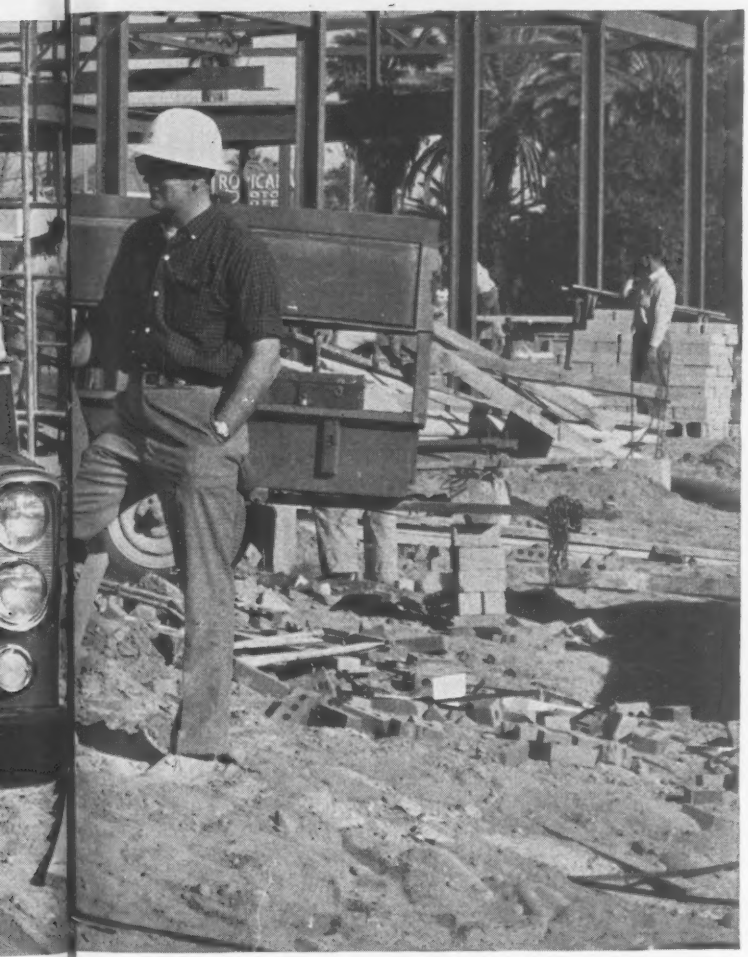
INTERNATIONAL® TRUCKS

WORLD'S MOST COMPLETE LINE

International Harvester Company, Chicago
Motor Trucks • Crawler Tractors
Construction Equipment • McCormick®
Farm Equipment and Farmall® Tractors

TIONAL® TRUCKS

New loadspace! New truck-designed power!



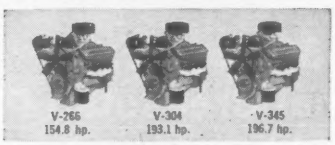
You name it—they do it! NEW INTERNATIONAL models up to 33,000 lbs. GVW are ready to handle any assignment . . . the tougher the better. They're powered by truck-specialized "six" or V-8 engines. They're distinctively and durably styled with dual headlights and the largest one-piece anodized aluminum grille on any truck. They're the newest additions to the world's most complete truck line . . . at your INTERNATIONAL Dealer's now!

Choose from 5 economy-proved INTERNATIONAL "SIXES"

Choice of 220, 240, 264, 282 and 308 cu. in. displacements

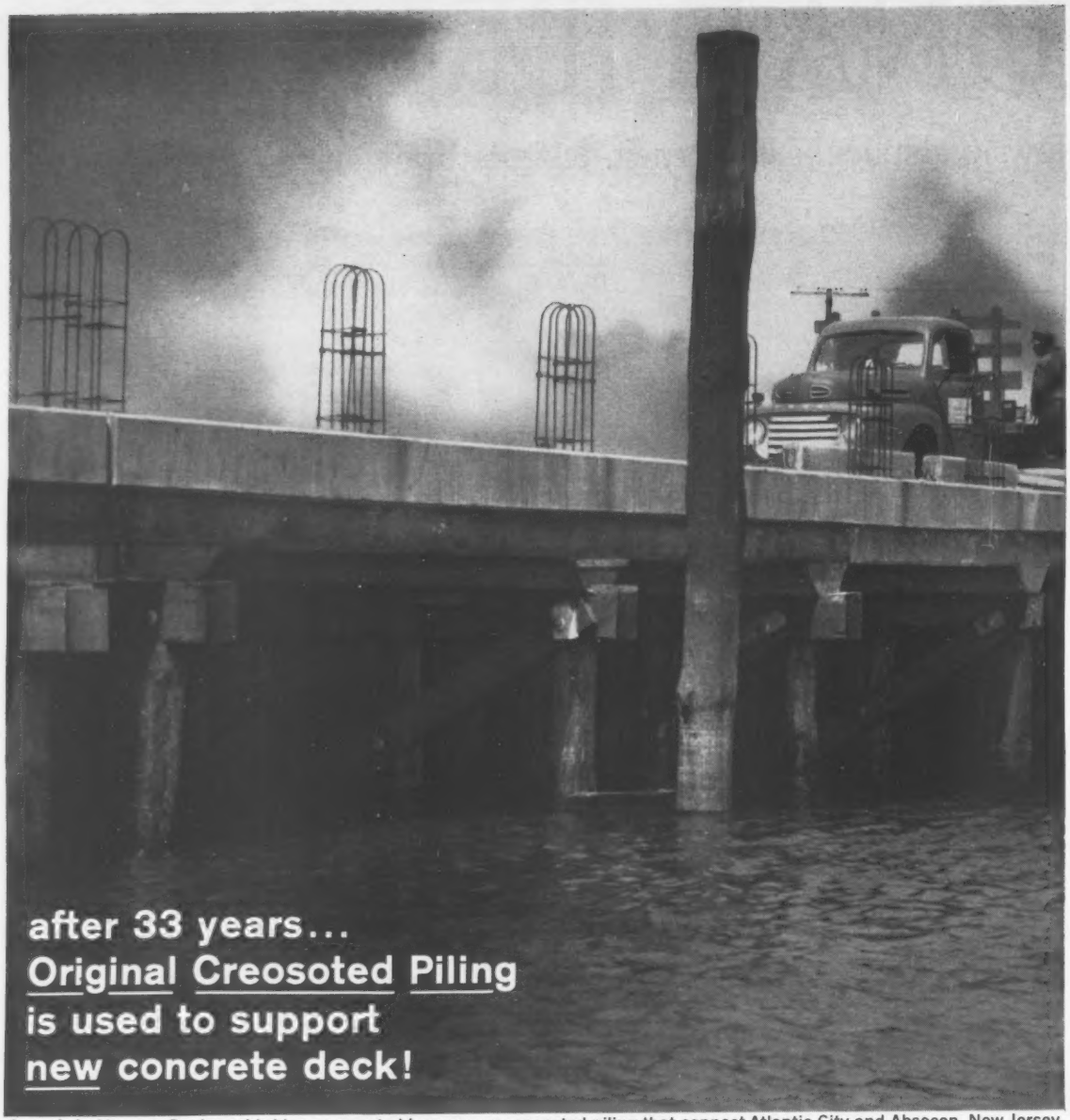
All-time, any-time favorites for efficient power at low cost . . . now better than ever! They're short-stroke, low rpm. engines designed for truck loads, truck speeds, truck work exclusively. Latest improvements through research extend engine life and reduce maintenance. Available in a range of horsepower to suit your needs exactly.

Optional . . . 3 new value-proved INTERNATIONAL V-8's



Real money savers that bring brand new economy to V-8 operation! They deliver astonishing mileage from regular gas . . . smooth, lively power with next-to-no oil consumption. Proved by tests. Proved on actual truck jobs. Optional in new INTERNATIONALS from light-duty pickups to medium-duty stakes to heavy-duty six-wheelers.

Shipped within 24 hours of order from INTERNATIONAL Truck Sales Processing Center! This new INTERNATIONAL model BCF-182 six-wheeler, with 96-in. bumper-to-back-of-cab dimension and 28,000 lb. tandem axle, is equipped with body, hoist, frame reinforcements . . . all the standardized equipment you need! Besides *fast delivery* it offers "take-any-terrain" ruggedness and easy-handling maneuverability for "tight" working conditions . . . husky "six" or V-8 power. Ask your INTERNATIONAL Dealer for full details.



One of six Absecon Boulevard bridges supported by pressure-creosoted piling that connect Atlantic City and Absecon, New Jersey.

Important time and money savings were made on this New Jersey project, when engineers discovered the long-run value of creosote protection. Originally, plans called for widening the bridge with a concrete deck over new concrete piling. Upon investigation, engineers were surprised at the remarkable condition of the piling—even after 33 years of service! In fact, the *old* piling was so good that it was used as the supporting structure of the *new* concrete deck—another on-the-job test of the long-run economical service provided by creosoted piling.

Whether it be bridges, culverts or other road structures, investigate pressure creosoted lumber because of its:

MULTIPLE TOXICITY: Marine borers, fungi and wood-destroying insects cannot develop immunity to the many toxic agents in creosote.

PENETRATION EASILY CHECKED: You can see the depth of penetration in any cross section.

THE TIME-PROVED PRESERVATIVE: Pressure-creosoted wood has remained sound without costly maintenance for generations.

PLASTICS AND COAL CHEMICALS DIVISION
40 Rector Street, New York 6, N. Y.

Allied Chemical

Industrial Building: Signs Point Up

- **Funds available from depreciation and profits are climbing fast.**
- **ENR's Backlog of Proposed Industrial Construction shows big upswing.**
- **Rising sales and production are taking up slack in capacity.**
- **Research programs are creating new opportunities for investment.**

Industrial construction will get a big lift during the coming few years from a rise in cash that business will have available for plant and equipment.

Some of this increase during 1959 and 1960 will come from improved profits. **But the bulk of the swelling flow of funds will be in the form of steadily rising depreciation allowances.**

Industry will have good reasons for putting more of this money into new plant construction. Rising sales and production schedules are gradually taking up the slack of unused capacity that helped sidetrack expansion plans during the recession. And a stream of opportunities for profitable investment in new production facilities will be coming out of research and development laboratories.

There is firm evidence that a rise in industrial construction is already on the way in the latest tally of ENR reports on proposed work. The $1.2 billion worth of new proposed industrial buildings going into the planning stage during the first four months of 1959 is 124% ahead of the early-1958 pace. These projects will soon be showing up in contract awards.

The outlook for industrial construction thus shapes up as much brighter than was indicated in the latest McGraw-Hill Annual Survey of Business' Plans (ENR Apr. 16, p. 23). This survey reported only a 7% increase in capital spending planned for 1959 over the recession level of 1958 and a slight additional rise in 1960.

Chances now are very good that industry will revise these capital spending plans upward for 1960, and 1961, in later budget reviews. And more money will probably go for plant expansion.

The McGraw-Hill Department of Economics just completed a study of the funds that industry will have available for plant and equipment. The study indicates that industry will have the best financial support for spending plans since the days of World War II.

In the two years 1959-60, corporations as a whole will generate enough money through their own operations—in depreciation allowances and retained earnings—to finance all presently planned capital expenditures. Depreciation alone will provide the bulk of these "inside funds."

Many individual companies, of course, will still have to use borrowed money for part of their plant and equipment outlays. These are mostly small and growing companies. Others will have more than enough cash to cover their needs. And in these companies with adequate money, it will be hard for financial officers to turn down requests from production and sales executives for new plant facilities.

The yearly flow of cash from depreciation will increase more than 20% by 1962—from $21.5 billion in 1958 to $26 billion in 1962—according to the McGraw-Hill survey. When lined up with present spending plans, these figures mean that:

- Depreciation will cover a higher proportion of total capital expenditures than at any time since the end of the war.
- In manufacturing industries, the expected flow of cash from depreciation is well in excess of plans for modernization. In fact, it is almost as great as all plans for capital outlays, including expansion.

This is the way the figures line up for the years 1958-62, on the basis of plans or estimates reported to McGraw-Hill:

	Depreciation Allowance (Millions of	Capital Spending Dollars)
1958	$21,465	$32,091
1959	22,823	34,209
1960	24,246	34,263
1961	25,287	32,883
1962	25,927	33,833

Depreciation would thus be supplying close to 80% of the money needed for present capital spending plans in 1960-62, compared with 67% last year and only about 30% immediately after the war. In manufacturing alone, depreciation expected in 1961-62 amounts to more than 90% of present spending plans.

In some individual manufacturing industries, depreciation will run even higher than present plans for plant and equipment outlays. These include autos, rubber products, textiles, food and beverages and the stone, clay and glass industries.

There is no absolute guarantee that this swelling flow of cash will result in boosted spending plans. But there are several very good reasons for thinking this will happen. One is that most companies have traditionally tied yearly depreciation allowances to plant and equipment expenditures, making it a policy to spend all their depreciation on new facilities.

In addition, the needs of industry for new plants will be mounting. Sales and manufacturing production are now running at all-time highs, shrinking the margin of unused capacity that was evident last year.

New products and new processes will also be creating a need for new plant facilities. Last year, despite the recession, business spent over $8 billion on research and development, 12% more than in 1957. This year R&D expenditures will top $9 billion. This research effort is bound to turn out countless new products and improved processes that will require new plants.

Some industries, and many individual companies, will still be strapped for cash to carry out expansion and modernization programs. But in others, the money from rising depreciation allowances and a better profit outlook will be a powerful argument for stepping up their spending on new plants.

(*B&F continued p.* 105)

5 Lorains pay off for J. & S. Construction Company

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Profits Cut as Competition Grows

In the face of increased construction activity, contractors across the nation are continuing to meet competition ranging from "stiff" to "murderously cutthroat." Result: Slim profits.

So severe is the competition, that in many areas bids are consistently running below engineers' estimates on almost all types of work. Low bids are ranging from 5% to 20% below estimates.

Most of this bid-price chopping is coming out of profit margins. All of this despite higher costs of labor, materials and working capital. Contractors are no longer absorbing all cost boosts. Some are resulting in slightly higher bids. But it appears the rise is in almost direct proportion to the rise in costs—still no help for profit margins.

And despite the large number of contractor failures last year, the overall number of contractors continues to rise (ENR May 14, p. 184). "It seems that for every contractor who goes broke in this area, two others spring up," says one Birmingham contractor. Most often heard is, "There are too many contractors."

In Chicago, a banker says, "There's more building here than last year but there are more contractors bidding, too. About twice the number during last year for every contract up for bid."

Contractors in the same area say more productivity from labor has helped keep their business on an even keel. Even so, contractors don't figure on profits amounting to more than 4% to 7%.

In light of reports from other cities, the Chicago area contractors are doing better than many of their contemporaries. Small contractors are generally having a more difficult time than the larger companies.

In Phoenix the smaller companies are in a tight competitive race. One says his profit margin is down to 3% from the "5% to 8% we should make." To maintain total dollar profits, this company had to double volume.

Pittsburgh contractors report profit margin today is just as low as it was last year during the recession and slackening in construction activity. Bids are coming in 5% to 10% below estimates, and as many as 20 bidders are likely to show up for a $5-million institutional building contract.

Milwaukee contractors are being hit hard. The General Contractors Association of Greater Milwaukee says that contractors are working on a profit margin of 1½% to 2%. "But now they are showing some optimism. This item may show some improvement soon," an association spokesman adds.

San Francisco, Houston and Miami contractors are in about the same fix.

California's Division of Architecture says construction companies in the San Francisco Bay area are working on profit margins of 2% to 2½%.

A Houston contractor says competition there is "fierce." Two years ago contractors looked for a 5% profit margin. "But this year I consider 3% a good one," one contractor reports.

He adds that he once figured on winning 10% of the jobs he bid. But of the last 68 jobs this contractor bid on, he obtained only two.

Another Houston contractor said, "When I started my company three years ago, I shot for a 6% profit. In 1957, I wanted 5%. Now a 3% profit margin looks good."

From Miami's AGC comes the report that members' profits are "razor thin." And one contractor reports that "we're all cost-conscious, but even the very best companies aren't making more than 1% to 2% net after taxes."

Most reports indicate contractors handling jobs of under $1 million are being hit the hardest.

(For a big job where the competition was real tough, see p. 21. The low bidder was $48.7 million under the estimate.)

Seaway Ports Can't Take Fully Loaded Ships Yet

The publicity given to the opening of the St. Lawrence Seaway has almost obscured the fact that it will be about 10 years before most of the seaway ports can handle fully loaded ships of 25½-ft draft.

A recent Corps of Engineers report on the Great Lakes ports recommends a federal grant of $63.6 million to supplement local expenditures on harbor deepening projects.

Such important harbors as Buffalo, Erie, Toledo, Cleveland, Chicago, and Milwaukee have a navigable depth of from 20 ft to 24 ft.

This means that large vessels will have to enter these ports only partially loaded.

Detroit, on the Detroit River, is the only port that can now handle Seaway ships.

The deepening of the Great Lakes connecting channels, which will carry the Seaway from Toledo to Duluth, probably will be delayed. This $145.6-million project is scheduled for completion in 1962. But the rate of Congressional appropriation of funds and White House requests for them is likely to push the completion date to 1963 or 1964.

The Administration asked for only $23 million this year although the Corps of Engineers said it needed $29 million for the work.

Business in Brief . . .

• **Baltimore urban renewal**—Three urban renewal projects were approved by Baltimore's Urban Renewal and Housing Commission. Biggest project is rehabilitation of 150 acres in the Harlem Park section of West Baltimore. It will be financed with $2.3 million in federal-aid funds and $700,000 in local funds. The other two projects, part of the University of Maryland's future campus, cover 13 acres in downtown Baltimore.

• **Airport may be grounded**—Plans for multimillion-dollar, jet-age air port in South Carolina are held up by a suit in the state's Supreme Court. Constitutionality of an act creating the Greenville-Spartanburg Airport District is being contested by taxpayers in the two cities. They sued to stop a $6-million bond issue for financing the joint, two-county airport.

• **Irrigation pipe**—Gulf Coast Marine Supply Co. of Mobile, Ala., and Pensacola, Fla., will distribute Reynolds aluminum irrigation, industrial and marine pipe in the Southeast. The firm will handle aluminum tubular items for the construction, chemical, petroleum, shipbuilding and agricultural industries in Louisiana, Mississippi, Alabama, Georgia and Florida.

• **More Pennsy road money**—Pennsylvania's Gov. David L. Lawrence asked the legislature to approve a $989.2-million motor fund budget for fiscal 1959-61. Of this, $332.7 million would come from federal-aid funds. The new highway budget would increase gasoline taxes one cent per gallon (to six cents per gallon), passenger car registration by $5 (to $15 per year) and drivers' licenses by $2 (to $3).

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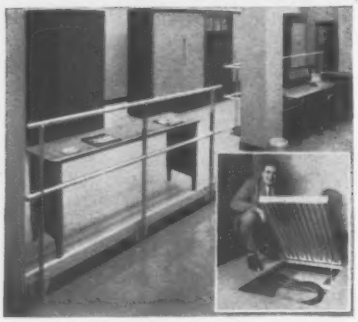

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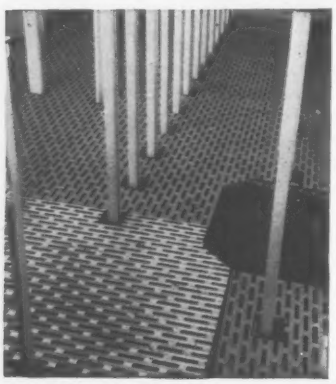

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. . . Business and Finance

Interest Rates Up

Mass housing may suffer; bond financing harder

Contractors and suppliers are paying higher interest charges on new bank loans this week.

Leading banks in the major cities have upped their prime rate (charged the biggest customers) from 4% to 4.5%. Other rates were also scaled upwards.

Long-term borrowing costs—a major item in the final cost of new construction—will also be higher. The reasons:

- Demand for money is rising while savings are lagging.
- Heavy demand is coming from individuals, government and industry—for both long- and short-term loans.

Rising interest rates threaten to curtail the mass housing market in the next few months. This market depends heavily on government-insured mortgage financing.

But the attractiveness of these mortgages as investments is closely linked to the rate of return on competing types of investment.

Thus when interest rates on corporate and government securities rise, FHA and VA mortgages become relatively less attractive. Interest ceilings prevent them from competing freely.

Actually, the high volume of mortgage borrowing in recent months has contributed to the soaring demand for bank loans and the decrease in savings.

Also up is demand to finance other types of construction, inventories and a broad range of consumer purchases, which are being stimulated by easy credit plans.

The rising cost of borrowing last week resulted in the rejection of all bids for $50 million worth of New York Thruway revenue bonds.

State Controller Arthur Levitt said the 4.3% interest was too high. He said it was unfortunate the bonds were offered at a time when the money market was depressed. He added the issue will be offered again "in a more favorable investment climate."

Mr. Levitt made no effort to predict when such a condition may prevail, but there are many in financial circles who feel that day may be some time off.

Apparently the financial officers of Detroit Edison Co. feel the same. Rather than place $50 million in bonds up for competitive bidding, the utility scaled the amount down to $40 million and sold the bonds on a negotiated basis. The reported yield is 4.75%.

BOOK NEWS-NOTES

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Contractors Search for Unity

- **Multi-employer bargaining spreads rapidly on the West Coast as employers seek to match the strength of unions.**
- **The advantages outnumber the disadvantages, but the problems of discipline and coordination remain.**

Association and multi-employer bargaining is on the increase throughout the country. But present indications are that the technique, which is designed to save employers money and to match more effectively the growing strength of unions, still needs a number of refinements.

The latest evidence of this trend toward collective action is contained in a new report on West Coast labor authorized by University of California experts and sponsored by the U. S. Labor Department's Bureau of Labor Statistics.

In California, Washington and Oregon association and multi-employer bargaining now covers two-thirds of the union workers in those areas and about half of the employers who engage in collective bargaining, states the report.

The most compelling factor in the development of this kind of bargaining, the report says, "is the fact that joint action through an association gives small or moderate-sized employers operating in a competitive market some equality of bargaining power in dealing with a single, strong union organization." The system also serves as a defense against union whip-sawing action, protects employers and unions against interunion conflict and saves in money and personnel.

Market size and nature has generally determined the form taken by association bargaining on the coast. The form is predominantly local in such industries as retail trade, but tends to be conducted on a county or regional basis in construction.

• **Pros and cons**—The disadvantages of this kind of bargaining, according to West Coast experience, is that "the employer surrenders a measure of his authority to the association." This delegation of authority means problems of organization, discipline and collective action.

Among the advantages are these: It gives small employers professional and expert representation at the bargaining table, brings systematic personnel management to highly competitive industries, equalizes costs, permits easier handling of grievances, and simplifies the administration of health and welfare and other fringe benefit funds.

But the consensus is that association bargaining helps solve more problems than it creates and that it has definitely achieved one of the major employer goals—greater equality of bargaining power.

It has "undoubtedly helped to stabilize labor costs as a competitive element," the report observes, "by introducing wide uniformities in conditions of employment and effective means for their enforcement."

• **Some examples**—An indication of the current interest in this trend is reflected by two new California developments in inter-association bargaining.

One is the formation of the Northern California Home Builders Conference to act as collective bargaining agent for contractors in the homebuilding industry.

The conference was formed by the Associated Home Builders (San Francisco) Inc.; Associated Home Builders of the Greater East Bay, Inc.; Peninsula General Contractors and Builders Association; Associated Home Builders of Sacramento, Inc.; and the Santa Clara County Contractors and Home Builders Association.

Its purpose is to represent member associations and their individual members in all matters relating to contract negotiations and labor relations.

The other development is a proposal by the Northern and Central California Chapter of Associated General Contractors to form a Central Labor Committee that would represent the Northern California Home Builders Conference, the Engineering and Grading Contractors Association and independent organizations, as well as the AGC.

The cost of negotiations and administration of labor contracts would be shared by the committee's member associations in proportion to their voting representation on the committee. The AGC would have four votes, the homebuilders two, EGCA one and independent groups one.

In the past, AGC has stood the cost—about $100,000 a year—of negotiating with 200,000 workers in 46 counties.

These developments are similar, at least in purpose, to the recent formation of the Eastern New York Construction Employers, Inc., which resulted from the merger of three builder associations (ENR Apr. 9, p. 108).

• **Coordination**—Despite the growth of interest in collective action, however, efforts to achieve the ultimate goal—unity—sometimes fail. And this applies to unions as well as to contractors.

It was just a year ago, for example, that the construction industry in Cleveland was thrown into a tailspin when the asbestos workers union broke away from the pattern of group bargaining and precipitated a long employer lockout.

Similar trouble on the other side of the fence has just occurred in Chicago, where the Mason Contractors Association went off on its own and negotiated a one-year, 25-cent labor contract with the bricklayers, while other contractors were trying to "hold the line" on wages.

The Mason Contractors, according to the Builders Association of Chicago, Inc., has been negotiating jointly with the association since 1944. The BAC contract historically set the bricklayers' wage scale.

BAC has refused to go along with the Mason Contractors' settlement, reached, it says, "outside of the long established channels."

Commenting on the problem posed by this departure, BAC says: "Labor peace and stable employment can be maintained only through united action by both strong labor unions and strong employer organizations."

(*Labor continued p. 110*)

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Looking Ahead in Labor Pacts

One of the most unusual collective bargaining agreements to appear on the horizon this year is being negotiated in the Philadelphia area by officials of the carpenters union and the General Building Contractors Association.

The contract, which is being concluded almost a year before it is to become effective, sets up an industry advancement fund to promote some ambitious and significant proposals, and provides the first health and welfare program for 7,500 "outside" or construction carpenters.

At a time when most unions are hedging on wage demands because of climbing prices, the carpenters have agreed—by a vote of 2,735 to 712—to accept a 10-cent an hour wage increase next year, fixing their wages until April 20, 1961.

A 15-cent wage boost, effective this month under the present contract, brought the journeyman carpenter's pay to $3.78½ cents an hour.

The new labor contract will become effective next May 1. It covers carpenters in a five-county area around Philadelphia.

The industry development fund will finance several revolutionary changes in the local construction industry.

Robert H. Gray, secretary-treasurer of the Carpenters Metropolitan District Council, said the fund, although controlled by the contractors' association, will be used, among other things, to finance the training of 16- and 17-year-old apprentices.

At the present time, some 200 apprentices annually attend the Dobbins Vocational School at night to study mathematics, blueprint reading, drafting, transit-and-level work and various aspects of carpentry. The contractor pays $50 for each apprentice under him to help with tuition, books and tools.

With the new program, Mr. Gray said, the industry fund will finance full daytime schooling for the apprentice and pay him regular wages for time spent in school.

(Apprentices receive 33⅓% of a journeyman's pay to start, with raises every six months up to 88% during his four years of training.)

With the new fund picking up the tab, all contractors will be contributing toward apprentice training, rather than only those employing apprentices.

Other ideas being discussed for the industry advancement fund include surety bonds for contractors to guarantee payments into the welfare fund; schools for construction superintendents, estimators and other supervisory personnel, and safety and public relations programs.

Contractors, in addition to paying the 10-cent hourly wage increase, will contribute 10 cents an hour per employee to the new welfare plan and five cents an hour to the new industry fund, commencing next May 1.

The year-ahead negotiations were necessary, Mr. Gray said, to allow time to work out details on the health and welfare plan.

An increase in Blue Cross premiums was a major factor in inducing the union to set up its own medical program.

• **Other negotiations**—Elsewhere, current negotiations are turning out more run-of-the-mill labor contracts.

A three-year agreement—which is relatively scarce this year—has been concluded by the Ohio Contractors Association and the Ohio Conference of Teamsters. Calling for an annual average increase of 9½ cents an hour, it covers 3,000 union members engaged in road construction.

The two organizations said the long-term contract was adopted to provide contractors and government agencies a better yardstick for determining long-range job costs.

Meanwhile, teamsters and mason supply firms in Rochester, N. Y., have agreed to a two-year pact granting a 10-cent increase now and seven cents next year. Teamsters and Cleveland building contractors have also settled on a two-year contract—12 cents now (with five cents of this going to welfare) and 10 cents next year.

In Rhode Island, plumbers' Local 28 has accepted a two-year contract that calls for a 15-cent wage boost now and 10 cents next year. Local 476 of the steamfitters settled for 15 cents in a one-year contract. New scale for each craft is $3.75. Travel pay (six cents up to 25 miles and seven cents beyond), welfare (10 cents) and pensions (15 cents) remain unchanged.

Plasterers and cement masons in Columbus, Ohio, have won five cents now, five cents in November and 10 cents next May in a two-year pact.

And in Chicago, the Builders Association, which is having some trouble in its bricklayer negotiations (see p. 108), has granted some 14,500 laborers a 25-cent hourly wage increase in a two-year contract effective June 1.

(*Labor continued p.* 112)

Labor in Brief . . .

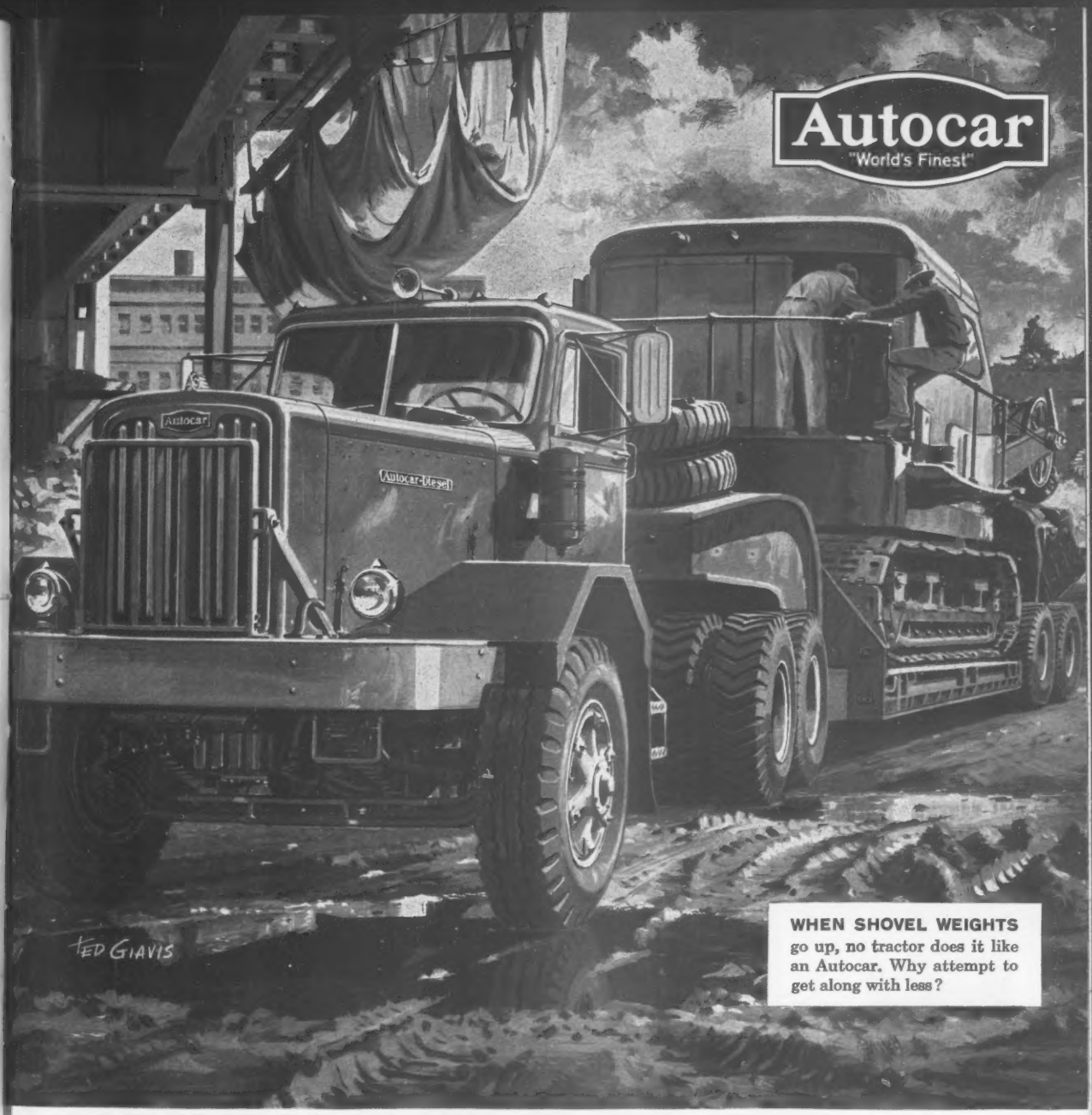
• **Unemployment compensation**—The House Ways and Means Committee again rejected last week a proposal to set federal minimum standards for state benefits. Forthcoming bill will provide for slightly higher tax, broader coverage of workers.

• **Minimum wage**—A bill to raise the federal minimum wage to $1.25 and to extend the law's coverage is opposed by the Chamber of Commerce on the grounds it would be "legislating higher consumer prices." AFL-CIO President George Meany has endorsed the bill to "undergird the economy," improve purchasing power, strengthen the free enterprise system.

• **Public relations**—The AFL-CIO Building and Construction Trades Department announced the launching of a "public relations program to disseminate wider information on its activities and to gain public support for its objectives." It has retained the services of the Pearl Agency, headed by Phil Pearl, former Public Relations Director for the AFL-CIO.

• **Labor patterns change**—A University of Michigan professor suggests that the unemployment compensation system, at least in his state, be changed to conform to the "realities of collective bargaining." Through industry-wide bargaining, he says, a union can shut down a plant in one state by a strike in another state without disqualifying as strikers those who are idled in the first state from receiving state benefits.

• **Who is bound?**—The Portland, Ore., AGC has asked for damages and an injunction against picketing pile drivers who refuse to accept a proposed labor contract. Question: Does ratification by other units in the bargaining group bind the local to the contract?



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Weekend Pay High

Union building tradesmen generally get double time

Construction workers may receive less elaborate fringe benefits than do employees in many other industries, but they are treated with comparative generosity when it comes to premium pay for weekend work.

Double time for Saturday and Sunday work is the industry's general rule. And it isn't necessary to complete a 40-hour work-week before becoming eligible for the double time. The result is better than that achieved in other industries and goes far beyond the legal requirements of the Fair Labor Standards Act, which merely calls for time and a half for hours in excess of 40 a week.

Those are the conclusions of the U. S. Department of Labor, which has analyzed the weekend premium pay provisions in 1,736 major collective bargaining agreements covering 7.7 million workers in substantially all industries. Of these agreements, 148 were in the construction industry. They affected 645,000 building tradesmen.

The construction industry's practices, according to the analysis, shape up like this:

- Of the 148 labor contracts, 139 provide for premium pay on Sunday and 128 for premium pay on Saturday. The Saturday figure represents 85% of the construction contracts. (Only 65% of the contracts in manufacturing industries call for Saturday premium pay.)
- Nearly 62% of the construction industry's Saturday provisions call for double time (instead of time and a half) compared to 3% in manufacturing, where time and a half prevails. In fact, only a tenth of all the agreements studied provided for Saturday double time and these were largely concentrated in the construction industry.
- Double time is paid for Sunday work in 87% of the construction labor contracts. The corresponding figure in manufacturing is 82%.

The superior benefits received by construction workers under these provisions are compounded by the wage differentials enjoyed by building tradesmen because the straight-time hourly wage scale is the basis for overtime pay. At the present time, the average of the construction industry's straight-time union wage scales is $3.40 an hour. Factory workers, on the other hand, are earning only an average of $2.23 an hour, including overtime.

(*Labor continued p. 117*)

NOT HERE! Bucyrus-Erie balanced engineering keeps production humming

A quiet job is a job in trouble.

The roar of trucks on the move . . . the smack of a shovel biting off a load . . . *these* are the money-making sounds of production. And to lick the problem of excessive downtime, *many heavy construction contractors choose Bucyrus-Erie electric shovels.*

Behind this popularity is Bucyrus-Erie's consistently high performance . . . backed by *Balanced Engineering.* Heavy-duty construction throughout keeps the shovel working, holds down maintenance, assures long service life. Power is delivered smoothly, accurately and dependably . . . doesn't go "down" at frequent intervals for tricky adjustments or servicing.

Your Bucyrus-Erie man can give you the full story on Balanced Engineering on the 4½-yd 110-B, 6-yd 150-B and 8-yd 190-B. Call him soon, or write Bucyrus-Erie Company, South Milwaukee, Wis., Dept. 1LA.

BUCYRUS ERIE

new Athey

25-ton-capacity rear dump hauls

15% EXTRA PAYLOAD!

Tough new T-1* Steel and new T-line Design mean extra tons per haul... faster round trip time... greater operating economy!

PR619 marks the coming of Athey's new trailer line—the T-line. New T-line design combines time-proved principles of Athey Trailers—extreme maneuverability, big loading target, ground-hugging roadability, fast clean dump—with new features and remarkable new T-1 Steel. Result? A sturdier, faster, trimmer vehicle that replaces dead weight with *15% extra payload!*

*Registered Trade-mark, United States Steel Corporation.

AMAZING NEW T-1 STEEL. Around the world, engineers have hailed its exceptional toughness, its resistance to impact abuse and abrasion even at 50° below zero, its yield strength —nearly three times that of structural carbon steel. Pioneer in the use of T-1 Steel in hauling, Athey now puts T-1 Steel to work in the new rear dump PR619. T-1 Steel of 100,000 minimum yield strength equips PR619 for more punishment, longer life with less downtime, more payload, less "deadload" every trip!

T-LINE! PAYLOAD OVER 2½ TIMES DEADLOAD—possible with tough new T-1 Steel. PR619 carries over 2½ times its own weight—25 tons or 20 cu. yds. heaped on a 2:1 slope.

T-LINE! 225 HP, 30.2 MPH — power comes from the husky new Caterpillar 619, reserve power for high speeds on steep rugged hauls.

T-LINE! BIGGER LOADING TARGET—13'7" by 9'2½". PR619's new flared T-line body top increases target area without increasing trailer width—speeds loading.

T-LINE! SPILL DEFLECTORS — new T-line body design of PR619 retains load—protects tires and hydraulic system during loading.

T-LINE! SELF-ALIGNING HOISTS—Two-stage hydraulic hoists of PR619 work free of bending stress... act fast, setting up straight line 57° dump angle over full trailer floor length for 12-second dump!

T-LINE! HYDRAULIC SYSTEM—features new gear type pump, full-flow filtering and four-bolt split flange fittings for top performance, long life.

y T Line PR619 TRAILER

What Does Obsolete Equipment Cost You?

Hauling with yesterday's equipment puts a real squeeze on profits. Rising maintenance costs, low output per manhour and per gallon of fuel, mount up to a daily "cost of obsolescence." But this is one cost you can wipe out completely!

SEND for new brochure that shows how the features of the Athey PR619 Trailer can cut your "cost of obsolescence."

Designers and Manufacturers of Heavy-duty Loading and Hauling Equipment

Athey

PRODUCTS CORPORATION
5631 West 65th Street
Chicago 38, Illinois

PR 619

REAR DUMP TRAILER

SEND TODAY

FOR ILLUSTRATED 6-PAGE BROCHURE

ATHEY PRODUCTS CORPORATION
5631 West 65th Street, Chicago 38, Illinois

Gentlemen: Please send me your booklet, "New Athey PR619 Trailer."

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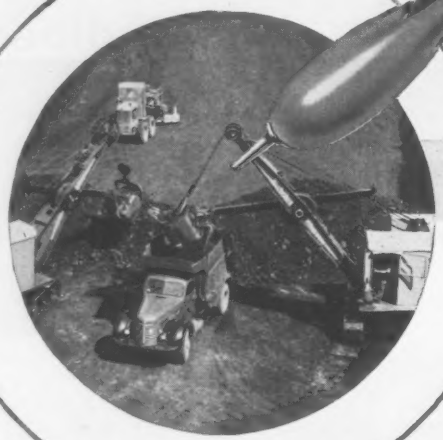
FIRM_____

CITY_____ ZONE____ STATE_____

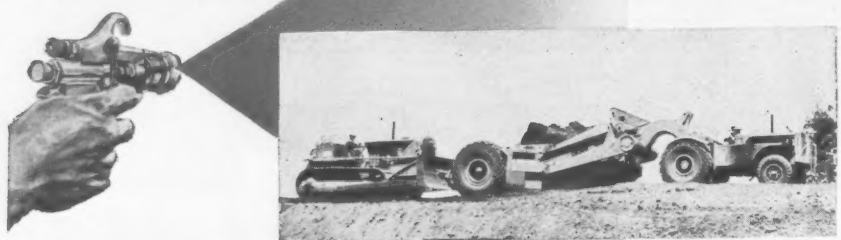
RUST TARGET



The Rust-Oleum System STOPS RUST and matches original equipment colors!

Why let moisture, sun, fumes, heat, and weathering *zero in* to make a rust target out of your costly equipment? Rust-Oleum protection brings new life to your machinery with tough, decorative coatings that last and last! If your equipment is rusty – just apply Rust-Oleum 769 Damp-Proof Red Primer right over the sound rusted surface after wire-brushing to remove rust scale and loose rust. Then – match your original equipment color with your choice of bright, lustrous Rust-Oleum finish coatings.

Keep your machinery looking tip-top with Rust-Oleum for smarter on-the-job appearance and better performance. You'll receive prompt delivery from your nearby Rust-Oleum Industrial Distributor. Write for our complete catalog with color charts, and for a free test sample to apply over rust. Try it . . . see what Rust-Oleum can do for you.



RUST-OLEUM®

STOPS RUST!®

There is only one Rust-Oleum—Distinctive as your own fingerprint.

RUST-OLEUM CORPORATION, 2543 Oakton Street, Evanston, Illinois

Hiring Hall Dispute

Construction closedown hits western Washington

Insistence by two unions on continuance of exclusive hiring halls closed 10 construction projects in the Seattle area last week and was expected to cause a halt in virtually all construction in western Washington.

The operating engineers and teamsters have been negotiating for new labor contracts with the Seattle, Tacoma and Mountain-Pacific Chapters of Associated General Contractors since their old contracts expired January 1.

The AGC chapters, which were involved in the famous Mountain-Pacific case on industry hiring procedures, contend any contract specifying an exclusive hiring hall violates the National Labor Relations Board directive.

That directive ordered a halt in hiring procedures that discriminate in favor of union members. Financial penalties for violations are imposed under what is known as the Brown-Olds rule.

Under language proposed by the AGC chapters, contractors would be able to hire workers in the open market, with the proviso that newly hired nonunion workers would be required to join a union within 30 days.

The operating engineers insist on a hiring clause that gives first priority to men with more than 500 hours of work in the trade in the past year, second priority to men with 500 hours or less and lowest priority to men without work experience in the trade in the past year.

Injuries on Way to Work Are Not Compensable

Pennsylvania's Workmen's Compensation Board has ruled that construction workers cannot recover, in the absence of unusual circumstances, for injuries received on the way to work.

It has rejected four benefit claims involving death and injuries to painters resulting from an automobile accident that occurred while they were en route from Bethlehem, Pa., to Elmira, N. Y., to paint a bridge.

Defendants named in the case were Argeros and Co. and/or Bethlehem Painting Contracting Co.

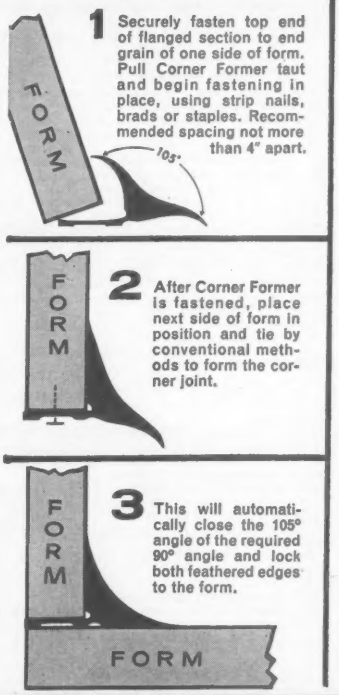
In ruling against the benefits, the board said, "the law is clear that there can be no recovery for injury on the way to work where the transportation was not furnished by the defendant and there was no special mission for the defendant involved."

(*Labor continued p.* 118)

FOR Rounded Concrete Corners

SERVICISED re-usable "GREEN STREAK" Corner Former

SIMPLE INSTALLATION



1 Securely fasten top end of flanged section to end grain of one side of form. Pull Corner Former taut and begin fastening in place, using strip nails, brads or staples. Recommended spacing not more than 4" apart.

2 After Corner Former is fastened, place next side of form in position and tie by conventional methods to form the corner joint.

3 This will automatically close the 105° angle of the required 90° angle and lock both feathered edges to the form.

Servicised "Green Streak" Corner Former provides a quick, easy and low cost method of forming perfect 1" radius rounded corners on piers, beams and all outside corners of poured concrete. Made of a tough, durable and resilient plastic, the Corner Former is simply fastened to the form (see installation drawings at left) and it automatically assumes the correct radius. Because it is readily removed and re-installed, Servicised "Green Streak" Corner Former is by far the lowest cost method of round corner forming you can use.

Available in standard lengths of 10 ft. Four 10 ft. pieces packaged in a tube. Write for full details and prices.

SERVICISED PRODUCTS CORPORATION
6051 WEST 65th STREET - CHICAGO 38, ILLINOIS

John L. Lewis Hits Labor Reform Measures

Labor reform legislation now before Congress was bitterly denounced last week by John L. Lewis, president of the United Mine Workers Union and titular head of the United Construction Workers.

Mr. Lewis, who takes the position that there are enough laws on the books to curb union corruption, said the pending bills would put "a cast iron chastity belt around the waists of 16 million union members."

He referred to the Barden bill as "88 pages of misery, weird and muttering rambles," conceded that the Kennedy bill is "more delicate and refined," and charged that all the proposals are advanced by "people with axes to grind" and are supported by "the rich, the wealthy and the powerful against the poor."

He accused the McClellan committee of having spent its time culling "the dregs of the labor movement" and said the committee is "a re-establishment of the principle of the Star Chamber of the Tudor and Stuart kings, with a slight touch of the Inquisition."

"Labor," he said, "should remain free—who is without sin?"

Industry Promotion Fund Is Under Legal Attack

A legal hassle over the collection and use of industry promotion funds was referred to the Federal District Court in Chicago last week by the Employing Plasterers Association of Chicago.

The association, which represents 45 lathing and plastering contractors in Chicago and Cook County, filed suit against the Chicago Plastering Institute, Inc. and a local of the plasterers union. The institute is a nonprofit group that promotes plaster construction.

Various labor agreements with the local union since 1945 have provided for contract payments to the institute for promotion of plastering and for hospital and other welfare benefits. The amount collected is estimated to exceed $8 million.

The contractors charge that the manner of collection and disbursement of the funds is illegal and contend that the illegalities will continue unless restrained by the court.

They claim that the union and the institute are violating the Taft-Hartley Act, that the contractor payments are the result of union pressure on employers and that the funds have been misused. They are asking for an injunction, an accounting and a receiver.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record
P.O. Box 12, New York 36, N. Y.

Bids: June 16, 1959.

Office of the Director of the Department of Public Works of the City of Newark, New Jersey

City Hall, Newark, N. J.
Date: May 14, 1959

Job. No. 4162 Division of Water Supply
Sealed proposals will be received at 10:00 A.M. Eastern Daylight Saving Time on Tuesday, June 16, 1959, by the Director of the Department of Public Works in Room 309, City Hall, Newark, New Jersey, and then and there at 10:00 A.M. publicly opened and read for the following work which is a part of the Charlotteburg Reservoir Project:

CONSTRUCTING THE FARBER BROOK DIVERSION WORKS, CONTRACT CRP-2.

The work under this Contract includes, but is not limited to the following:

(a) Construction of a diversion dam approximately 225 feet long. This dam will consist of a rock sloped concrete spillway 120 feet long with two abutments each 15 feet long and two stone paved earth embankments on the ends 50 feet and 25 feet long. It will contain a 24 inch diameter sluiceway and other appurtenances.

(b) Construction of a diversion channel approximately 2550 feet long between Farber Brook and Canistear Reservoir. The diversion channel will be of trapezoidal shape, 7 feet high, with a 7 foot base and 1:1½ side slopes, and will be paved with stone blocks on a gravel base.

The Drawings, Specifications, Instructions and Information for Bidders, the Bid or Proposal, Contract and Bond forms are on file and may be seen at the office of the Division Engineer, Division of Water Supply, Department of Public Works, Room 101, City Hall Annex, Newark, and at the office of Parsons, Brinckerhoff, Hall & Macdonald, Engineers, 165 Broadway, Room 2432, New York, New York. Copies may be obtained at the office of Parsons, Brinckerhoff, Hall & Macdonald upon deposit of twenty-five dollars, which sum will be refunded upon return of the Drawings and Specifications in good condition within one month after receipt of bids, or upon submittal of a formal bid.

An Agreement of Surety signed by a Surety Company authorized to do business in New Jersey shall accompany each proposal for execution of Contract on award thereof. Said Agreement of Surety shall be in conformity with the requirements specified in Instructions and Information for Bidders.

The Contract will be awarded to the lowest responsible Bidder. The City reserves the right to reject any and all bids or waive informalities therein.

All proposals are subject to the requirements of all laws and City ordinances affecting same. The Bidder's attention is called to Section 2.58 of the City Administrative Code.

By direction of the Director of the Department of Public Works of The City of Newark.

George W. Andress
Director, Department of Public Works

Bids: June 2, 1959

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
FOR
CONSTRUCTION OF MAINTENANCE BUILDING
FOR
ST. LAWRENCE POWER PROJECT
NEAR MASSENA,
ST. LAWRENCE COUNTY, NEW YORK
SPECIFICATIONS NO. PA-5-11047

ST. LAWRENCE CONTRACT NO. 54

NOTICE TO CONTRACTORS: The Power Authority of the State of New York will receive sealed proposals for construction of the Maintenance Building for the St. Lawrence Power Project, near Massena, St. Lawrence County, New York, until 11:30 A.M. Eastern Daylight Saving Time on the 2nd day of June, 1959, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The estimated quantities of the principal items of work are as follows:

5,000 cu. yds.	Excavation unclassified
3,600 cu. yds.	Foundation course gravel
11,500 gals.	Bituminous macadam penetration method
1,100 cu. yds.	Concrete
140,000 lbs.	Reinforcement bars
1,060 lin. ft.	Reinforced concrete drain pipe various sizes
210,000 lbs.	Structural Steel
20,000 sq. ft.	Furnishing and installing concrete blocks, various sizes
6,100 sq. ft.	Installing 4" glazed face brick
15,000 sq. ft.	Furnishing and installing steel rock decking

Also included is furnishing and installing mechanical equipment and piping, installing electrical systems complete and painting.

All work shall be completed on or before October 1, 1959.

Plans, specifications and proposal forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, specifications and proposal forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the total of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: May 25, 1959

Govt. of District of Columbia Dept. of Highways & Traffic, D. C.

May 1, 1959. SEALED PROPOSALS will be received in Room 404, 499 Pa. Ave. N.W., Wash. 1, D.C., until 2 PM, EDT, May 25, 1959, and then publicly opened and read for CONSTRUCTING THE 12TH STREET EXPRESSWAY, "C" STREET, S.W., TO CONSTITUTION AVE., STRUCTURE NO. 172, Federal Aid Project No. S-72(4), consisting of approx. 100,500 cu. yds. Unclassified Excavation; 57,600 cu. yds. Backfill and Fill; 15,400 sq. yds. 8" R.P.C. Conc. Base; 18,444 cu. yds. Class "BB" Concrete; 2,700,000 lbs. Reinforcing Steel; 26,345 cu. ft. Class "A" Stone Masonry; 73,150 sq. ft. Tunnel Tile; and 824 Cu. Yds. Class "AA" Concrete. (Minimum wage rates for this project have been predetermined as required by law and are set forth in the bid proposal). Proposal forms, plans and specifications obtainable from Supervisor, Bid & Contract Section, Procurement Office, D.C., Rm. 404, 499 Pa. Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D.C. Treasurer. (Phone NA 8-6000, Ext. 2378).

OFFICIAL PROPOSALS

Bids: June 4, 1959.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Public Buildings Law, Canal Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 4th day of June 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 353 Broadway, Albany 1, New York						
Albany	FARC 59-46	Altamont-Voorheesville, SH1541 Proj. S-558(1)	0.30	Asph. Conc. Pavt.=0.27 Mi.; Misc. Work=0.30 Mi.; Br. No. 1, R.C. Closed Box, 24' SP.	$5,000 Plans $5	$87,000
Albany & Saratoga (Rte. 9)	FARC 59-44	Loudon-Crescent, SH5555; Loudon Crescent Pt. 2, SH5614; Clifton Park-Crescent Pt. 2, SH5639 Proj. F-639(14)	2.09	Asphalt Conc. Pavt.	$35,000 Plans $5	627,000
Albany (Rtes. 9 & 7)	T.S. 59-8	Loudon Road Pt. 2, SH119; Troy-Schenectady Pt. 3, SH604; Troy-Schenectady Pt. 4, SH630; Loudon-Crescent, SH5555	3.13	Traffic Signs	$3,500 Plans $5	63,000
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Montgomery (Rte. 10)	R.C. 59-48	Palatine Bridge-Stone Arabia, SH517; Stone Arabia-Ephratah Pt. 1, SH1504	6.49	Asph. Conc. Type 1A; Pavt.	$9,000 Plans $5	157,000
Montgomery (Rte. 5)	R.C. 59-49	St. Johnsville-Nelliston, SH5109 Nelliston-Palatine Br. SH5123	3.50	Asph. Conc. Type 1A, Pavt.	$10,000 Plans $5	175,000
Oneida (Rte. 126)	FARC 59-19	Whitesboro-Trenton, SH5325 Proj. S-214(3)	0.37	Asph. Conc. Ty. 1A Pavt. Prestress. Conc. Beam Br. 2 Sp. 140'	$10,000 Plans $5	173,000
DISTRICT No. 3, Earle E. Towlson, Acting District Engineer, 333 E. Washington St., Syracuse, New York						
Cortland, Onondaga Oswego & Tompkins	R.C. 59-51	13 Various Highways in District No. 3, on Routes 281, 31, 41A, 48, 104, 34 and 34B	32.24	Subsealing Cement Conc. Pavement	$15,000 Plans $5	268,000
Cortland & Onondaga (Rtes. 11 & 281)	FARC 59-69	Lafayette-Tully, SH5516 Preble-Tully Center Pts. 1 & 2 Fash 45-3 Proj. F-215(6); S-564(1)	5.06	Asph. Conc. Ty. 1A Pavement	$8,000 Plans $5	157,000
Onondaga (Rte. 11)	R.C. 59-54	Syracuse-Lafayette, SH5365; Lafayette, SH76 Lafayette-Tully, SH5516	10.20	Asph. Conc. Ty. 1A Pavt.	$23,000 Plans $5	406,000
Onondaga (Rte. 11)	FARC 59-45	Cicero-Brewerton, SH5249 Proj. F-463(19)	0.23	Asph Conc. Ty. 1A Pavt.	$2,000 Plans $5	38,000
Seneca (Rte. 414)	FARC 59-68	Reservation Road-Fayette, S.H. 320 Proj. S-671(2)	5.72	Asph Conc. Ty. 1A Pavt.	$10,000 Plans $5	185,000
Wayne (Rte. 104)	FARC 59-50	Sodus-Alton, SH5632; Alton-Wolcott Pt. 1, SH1516 Proj. F-362(9)	7.80	Asph. Conc. Ty. 1A	$15,000 Plans $5	263,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Livingston (Rte. 36)	FARC 59-42	Caledonia-Mount Morris Pt. 1, SH5593 Proj. S-172(3)	6.03	Asph. Conc. Ty. 1A, Pavt.=6.01 Mi. Miscell Work=0.02 Mi.	$14,000 Plans $5	251,000
Monroe	FASS 59-13	Union Street Co. Rd. 37 Proj. S-508(1)	0.23	Asph. Conc Pavt.=0.15 Mi.; Misc. Work=0 08 Mi. Comp. I-Beam Bridge 2 Sp. 109'	$7,200 Plans $5	130,000
Monroe	T.S. 59-6	Lake Ontario State Parkway, Sects. A & B	10.32	Traffic Signs & Delineators	$5,000 Plans $5	88,000
Monroe (Rte. 104)	FARC 59-57	Ridge, Part 1 (Rochester-W. Greece), SH6 Proj. F-402(10)	2.27	Asph. Conc. Ty. 1A Pavt.=2.21 Mi. Misc. Work=0.06 Mi.	$8,600 Plans $5	154,000
Monroe	M 59-5	Bridge E-143, Winton Road Over Barge Canal	....	Cleaning & Painting Bridge	$250 Plans $10	4,500
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Cattaraugus	P.S.C. 18479	Elm Street Extension over Penna. Railroad in Portville	0.30	8' Cem. Conc. Pavt. 20' Wide, R.R. Sep. Comp. W.F. Beam 3 Sp. 132'	$14,000 Plans $5	266,000
Cattaraugus (Rte. 17)	R.C. 59-47	Carrollton-Killbuck, SH5418	1.95	Asph. Conc. Pavt.	$11,000 Plans $5	202,000
DISTRICT No. 6; James H. Thomas, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Steuben	FASS 59-9	Morgan Bridge Co. Rd. 11 Proj. S-949(2)	0.81	Bit. Mac. with Double Surf. Treat. Pavt., Prestress. Conc. Bridge 4 Sp. 244'	$20,000 Plans $5	377,000
Steuben (Rte. 15 & 17)	FASH 59-10 FASH 59-11P FARC 59-56	Painted Post-West City Line of Corning Pt. 1; Painted Post-West City Line of Corning Pt. 2, Fash 57-11; Corning-Painted Post, SH5026, 5211 Proj. U-UG-225(14) & U-593(10)	2.70 (1.99 Acc.)	Asph. Conc. Pavt.=4.11 Mi.; Misc. Work=0.58 Mi.; 1 R.C. Box Br. 2 Sp. 30'; 1 W.F. Comp. Beam Bridge 9 Sp. 575.8'=; 2 Hy. Seps. W.F. Comp. Beams 4 Sp. 168.8' and 4 Sp. 168.6'; 1 R.R. Sep. Comp. Steel Girder 3 Sp. 250'	$335,000 Plans $5	6,069,000
Tioga (Rte. 38)	FARC 59-55	Newark Valley-Berkshire Pt. 1, SH1077; Newark Valley-Berkshire Pt. 2, SH1076; Richford-Harford Mills, SH1452 Proj. F-804(5) and F-427(10)	8.39	Asp. Conc. Pavt.=8.37 Mi; Misc. Work=0.02 Mi.; 1 W.F. Comp. Beam Br. 2 Sp. 129'; 1 R.C. Twin Box Br. 24' Sp.; Widen 3 Exist R.C. Slab Brs. 20' SP.; 22.8' Sp & 22.3' Sp.; Widen Exist. 36' Sp. I-Beam Bridge. Rehabilitate Exist. 85' Sp. Plate Girder Br.	$118,000 Plans $5	2,139,000
DISTRICT No. 7, Robert W. Sweet, District Engineer, 444 Van Dusee Street, Watertown, New York						
Franklin, Jefferson Lewis & St. Lawrence (Rtes. 3, 193, 289, 26A & 56)	R.C. 59-58	Br. No. 1, SH8437; Br. No. 1, SH1150; Br. No. 1, SH49-5; Br. No. 1 SH1193 & Br. No. 3, SG8199; Br. No. 1, SH1149	....	Cleaning & Painting 6 Bridges	$1,000 Plans $5	18,000
DISTRICT No. 9, Joseph C. Frederick, District Engineer, 71 Frederick Street, Binghamton; New York.						
Broome (Rte. 17)	FARC 59-59	Park Bridge, SH127 Binghamton-Windsor Pt. 2, SH5022 Proj. F-344(24)	1.92	Asph. Conc. Pavement	$11,000 Plans $5	212,000
DISTRICT No. 10, M. E. Goul, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
New York	FAHRD 59-1	Harlem River Drive (East 138th St. to West 145th St.) Proj. U-1133(3)	0.40	Bulkhead Wall, Fill & Misc. Work Incld. Steel & Conc. Platform Spanning Subway Tunnel	$100,000 Plans $5	1,785,000
Suffolk (Rte. 110)	FARC 59-10	Amityville Village: Broadway, SH1633; Huntington-Amityville Pt. 2, SH1219 Proj. U-297(5)	2.12	Demolition of Buildings	$9,000 Plans $5	168,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the mfnimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City. The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit. Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: June 4, 1959

Notice to Contractors

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Public Buildings Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 4th day of June 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name
DISTRICT No. 1, G. L. NICKERSON, District Engineer, 353 Broadway, Albany 1, New York		
Albany	FASH 59-8 FAC 59-5	Albany South Side Route, Pt. 1 City of Albany: Fuller Road Alternate Proj. U-1132(1)

Miles	Type	Deposit	Estimated Cost of Work
0.56	9" Cem. Conc. Pavt. 2 @ 24' Wide	$26,000 Plans $5	$484,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: July 4, 1959

Republic of Iraq
Ministry of Interior

DIRECTORATE GENERAL OF MUNICIPALITIES.
Notice No. 1.
TENDER FOR CONSTRUCTION OF MAHMOUDIYAH NEW WATER SUPPLY SCHEME.

Tenders from constituted qualified engineering firms with experience in public works of magnitude are invited by the Directorate General of Municipalities, Ministry of Interior, for the supply, erection of two clarifying tanks with mechanically operated sludge scrapers, flocculating tanks, flash mixers, alumina dosing apparatus, horizontal rapid pressure filters, air blowers, gaseous chlorinators with platform weighing scales, two electrically operated low lift pumping units, two electrically operated high lift pumping units switch boards, cables, venturi meter and recorder, a welded steel plate elevated service tanks, electrically operated water level recorder, suction main, pumping mains, pump and filter house building overhead gantry crane, electric lighting, sewage disposal system and all other appendages, connections and ancillary works in the new water supply scheme for Mahmoudiyah Baghdad Liwa of 790,000 gallons per day capacity according to the General Conditions and Specification which can be obtained from the Accounts Sections of the said Directorate on production of a valid Chamber of Commerce Certificate or from the Embassy of Republic of Iraq or Legation in foreign countries, on the respective payment of the sum of ID. 10/000 or (equivalent) for each copy or for two copies.

Tenders should be submitted by registered post in sealed envelopes directly addressed to the Directorate General of Municipalities, Baghdad, and marked "Tender for Mahmoudiyah Water Supply Scheme".

Closing date of tender—12 noon on Saturday, 4th July, 1959.

MINISTER OF INTERIOR.

Bids: May 28, 1959

Board of Education
Bureau of Construction

Notice Re: Prequalification Forms for Contractors

NOTICE IS HEREBY GIVEN THAT The Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, N. Y. will receive applications for prequalification from contractors who may wish to submit bids for the proposed hereinafter specified contracts as follows:

General Construction, Plumbing and Drainage, Heating and Ventilating, Electrical Work and Lighting Fixtures and Heavy Kitchen and Cafeteria Equipment and Laboratory Tables.

BROOKLYN
P. S. 19, New Add. & Mod.
So. 3rd & Rodney Sts.
P. S. 262, New Building
Macon St. & Reid Avenue
P. S. 274, New Building
Kosciusko St. & Bushwick Ave.,
James Madison H. S., Mod.
Bedford Ave., and Quentin Road
QUEENS
P. S. 139, New Add. & Mod.
Wetherole St. & 63rd Drive

Prequalification application forms will have to be secured from and must be submitted to the Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York.

Bids when advertised, will be received from prequalified bidders only.

Time for submitting prequalification applications by contractors will expire on Thursday, May 28, 1959.

WILLIAM H. CORREALE
Superintendent of School Buildings,
Design and Construction
Dated: May 11, 1959
Starting: Monday, May 18, 1959
Five (5) Days.

Bids: June 16, 1959.

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS FOR THE FURNISHING AND DELIVERY OF INTAKE GATE HOISTS FOR WATERWAYS
SPECIFICATIONS NO. PA-N-24011
NIAGARA CONTRACT NO. NP 29

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery thereof F.O.B. Echota Siding, Niagara Falls, New York, of two intake gate hoists for the dual conduits for the waterways in Niagara Falls, Niagara County, New York, until 10:30 A.M. Eastern Daylight Saving Time on June 16, 1959, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be entertained for furnishing and delivery of two 350 ton capacity, four drum intake gate hoists complete with appurtenances for the two intake gates at the waterways gate houses. First delivery will be required March 1, 1960.

All work shall be completed on or before May 1, 1960.

Plans, specifications and proposal forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of ten ($10.00) dollars per initial set of contract documents, and five ($5.00) dollars per set for additional sets, no part of which will be refunded. Plans, specifications and proposal forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 per cent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-N-24011

Bids: June 9, 1959.

Contract PN-510.005

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
BUILDINGS NOS. 293, 294, 295 AND WHARF PAVING AND UTILITIES

Sealed proposals for the construction of pavement and utilities for the wharf at the site of future buildings 293, 294 & 295 on the North side of City Channel at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, June 9, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, May 21, 1959

U. S. Government

Department of Commerce, Bureau of Public Roads, May 8, 1959. SEALED BIDS will be received at the office of the Bureau of Public Roads, Gatlinburg, Tennessee, until 11 a.m., E.S.T., JUNE 11, 1959, for Project 15A6, Foothills Parkway, Sevier County, Tennessee. Bridges over West Fork of Little River, one at Perry Dam and the other at Gum Stand, each with a Prestressed Concrete Superstructure having three spans of 61 feet each with a width of 33 feet, together with approaches and other work. The approximate quantities of the more important items aside from the Superstructures are 2,425 cu. yd. Concrete, 139,600 lb. Reinforcement Steel, and 215 cu. yd. Stone Masonry. Minimum wage rates have been fixed as required by law. Plans, specifications, and proposal forms are available upon request at the address given above or Bureau of Public Roads, 1440 Columbia Pike, Arlington 4, Virginia. A. F. Ghiglione, Regional Engineer.

Sealed bids for central air conditioning, etc. at the Penn A.C. Building, 225 South 18th Street, Philadelphia, Pa., will be received until 2:00 P.M., EDST, June 17, 1959; and then publicly opened. Bidding material may be obtained after 5/22/59 from the Business Service Center, General Services Administration, 250 Hudson Street, New York 13, N. Y.

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ENGINEERING NEWS-RECORD
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The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

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Subject to Agency Commission.

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$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

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ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Asst. Prof. of Civil Engineering to teach fluid mechanics. Applicant must have MS in CE. Write to John A. Oakey, N. D. State College, Fargo, N. D., giving personal record and minimum acceptable 9 months salary.

Graduate Civil Engineer with 3 to 4 years highway experience for permanent position in West Virginia. Duties include office work and supervision of survey. Send resume and salary requirements to P-1555, Engineering News-Record.

Town Engineer—Southington, Conn., population 17,500, semi-rural with rapid growth and all the problems you want to tackle. Must have broad municipal experience and qualify to register in Connecticut. Recently-established position with July 1 budget for staff of three plus summer help. Up to $8,000 for best man. Resume to Director of Finance, Town Hall.

Draftsmen (2)—Experienced in heavy construction field; to draw isometrics. Job location in midwest, long term. Send resume and salary required. Reply P-1663, Engineering News-Record.

Office Engineer—Heavy construction job in midwest. Long term employment. Send resume and salary required. Reply P-1668, Engineering News-Record.

Field Engineer—Experienced on dams and locks; must be able to handle field engineering and inspection. Long term. Send resume and salary required. P-1673, Engineering News-Record.

Sanitary engineer preferably with several years construction experience. Work in upper New York State with 64-year old consulting engineering firm (hydraulic and sanitary). Send qualifications to P-1684, Engineering News-Record.

Resident Engineer Wanted. Graduate engineer with experience in supervision of construction on water, sewerage, steam power and/or building construction. Location generally midwest, but assignments may be to other areas of U. S. Established midwest consulting engineering firm. Reply in detail to P-1293, Engineering News-Record.

Experienced Architects and Architectural Draftsman. Excellent opportunity with established consulting firm in Middle West. State education, experience and required salary. Reply to P-1545, Engineering News-Record.

Experienced Estimator to relocate in Minnesota, capable to estimate heavy construction and highway projects. Bridge, concrete, steel. Salary open. Submit resume and requirements. Permanent position with highly responsible firm. Address. P-1595, Engineering News-Record.

Experienced estimator and engineer, capable of estimating and constructing highway projects, bridges, concrete and steel. Permanent position with highly responsible New England firm. Submit resume of qualifications and salary expected. P-1757, Engineering News-Record.

Sanitary Engineer to direct Division of Sanitation with generalized program in well established County Health Department. Population: 82,000. Liberal vacation, sick leave, retirement, longevity benefits. Cattaraugus County Health Department, 302 Laurens Street, Olean, New York. Salary: $6,564-$7,620.

• POSITIONS VACANT

Graduate Engineer for key position. Minimum of 8 years experience in estimating, purchasing and expediting in heavy, commercial and industrial building construction. Must have administrative ability. Location in Nebraska-Kansas area. Send complete resume, references and recent photograph. P-1589, Engineering News-Record.

Plant Manager—Structural fabricating shop Pittsburgh area. Must know labor relations, shop and drawing room practice. Salary open. Reply in detail to P-1613, Engineering News-Record.

Two Teachers, Department of Mechanics and Electricity. One, department head, Ph.D. mechanical engineering preferred. Degree in physics for second position. B.S. or M.S. also considered. Teach mechanics, strength of materials, thermodynamics, applied electricity, general physics. Salary and rank dependent on qualifications. Apply President, Montana School of Mines, Butte, Mont.

Hydraulic Engineer with experience in river hydraulics, stream gaging and analysis of hydrologuc data needed to fill vacancy in hydraulic Data Section. Salary range $6600 to $7800. Opportunity for advancement. Send resume to Chief Engineer, Indiana Flood Control and Water Resources Commission, 1330 West Michigan Street, Indianapolis 7, Indiana.

Municipal Building Inspector for administration of Building Code, Zoning and Housing Ordinances. Graduate engineer experienced in building construction and municipal ordinance enforcement preferred. Good working conditions. Salary $6,055-$8,232. Submit qualifications to Superintendent of Public Works, Municipal Building, Montclair, N. J.

Chief Engineer for medium size growing Reinforcing Fabricator. Excellent opportunity for right man. All modern facilities. P-1714, Engineering News-Record.

Chief Structural Engineer capable of assuming charge of structural section of an engineering firm located in a medium-sized university city in the Midwest. Reply to P-1718, Engineering News-Record.

• POSITIONS WANTED

BSCE, Young, Single, 2½ years A.F. Installation Engineer, diversified experience. Seeks responsible position. PW-1632, Engineering News-Record.

Construction District Manager—B. Eng., Age 33, twelve years on all types building construction. Thorough knowledge bid to completion, used to heavy responsibility. Have fine record of successfully completed projects. Desire position in northeast with advancement or future participation. Available June. Fine references. PW-1690, Engineering News-Record.

Construction Engineer—Graduate CE, licensed. Heavy construction, missile projects and buildings. Wide experience in the successful preparation and processing of construction claims on state and government work. Desires part time work with contractor. PW-1686, Engineering News-Record.

Quarry Superintendent—long experience— good references—go anywhere. Speak English & Spanish. PW-1633, Engineering News-Record.

DON'T FORGET

the box number when answering advertisements. It is the only way we can identify the advertiser to whom you are writing.

• POSITIONS WANTED

Gen. Supt. or Labor foreman wants work on any type of roads; bridges; sewers; & heavy construction. Available now. 30 yrs experience. PW-1693, Engineering News-Record.

Pilot —Commercial Instrument—Production Expeditor. Presently employed on Latin-American project nearing completion. Over 10,000 hours. Sober, dependable family man. Detailed resume on request. PW-1610, Engineering News-Record.

Construction Manager and General Superintendent, 25 years experience of bidding to completion on public and industrial buildings. Desire permanent relocation. PW-1617, Engineering News-Record.

Field-office Engineer—layout, supervision computations and drafting. Experienced in Municipal and Heavy Construction. Desires to relocate. P. O. Box 53-296, Miami, Fla.

P.E., Consultant, complete buck conveyor sys., cement, steel, power, sugar, sand- and gravel plants. Screening, crushing sta. Boat loading & unloading, etc. Dom. or foreign. Available June. PW-1448, Engineering News-Record.

Superintendent over blasting & heavy excavation work. Good pusher. Spanish & English. References. PW-1640, Engineering News-Record.

Superintendent over shaft & tunnel and general rock work. Speak English & Spanish. PW-1644, Engineering News-Record.

Executive, Buildings and Heavy Construction, formerly Manager for New York Contractor, open for connection where scope requires top man, fully qualified by experience, all phases of General Contracting. Minimum $20,000. PW-1591, Engineering News-Record.

Engineer Estimator: Presently an official and Chief Engineer of large midwest general contractor specializing in industrial construction. Experience in all phases of engineering construction and administration. PW-1703, Engineering News-Record.

Construction Supt. Top level only. Available immediately. Call Akron, Ohio, Walnut 3-9698.

Construction Executive. Wide experience in industrial, institutional, and commercial field as supt., general supt, construction manager. Available soon. PW-1716, Engineering News-Record.

Physician—allround experience, German national, completed contract with US overseas construction Co., Age 33, available for foreign jobs. PW-1730, Engineering News-Record.

Civil Engineer, 33, seven yrs. Gen. Plant Engineering multi-plant corp'n; 2 yrs. Project Manager major industrial and building contractor. Bid to completion Commercial, Monumental, Industrial Bldgs. Customer sales contacts. Responsible position with opportunity. PW-1704, Engineering News-Record.

Exp. Bldg. Estimator, Grad. C.E., lic., desires to re-locate. PW-1720, Engineering News-Record.

Mechanical Superintendent. 50. Desires overseas position. 25 years experience. 18 as Supt. 4 completed overseas contracts, Venezuela and Europe. Some French. Work from metric drawings. Heavy or light machinery installation and associated work. Best references from nationally known contractors. Resume on request. PW-1719, Engineering News-Record.

(Continued on the following page)

OVERSEAS OPPORTUNITIES FOR DESIGN ENGINEERS

ASS'T DAM DESIGN ENGINEER—Five years design experience with possibly four years in general heavy construction design, preferably in hydraulic structures. A minimum of two years experience should be in the design of dams, preferably of the arch type.

ASS'T CIVIL DESIGN ENGINEER—Five years design experience. Four years should be in general design of hydraulic structures, such as spillways. Two years in design preparation of construction drawings for miscellaneous hydraulic structures is essential.

ASS'T POWER PLANT DESIGN ENGINEER—Five years general structural engineering experience. A minimum of two years experience should be in the design of a hydroelectric power station including the preparation of construction drawings.

Family status assignments, new housing, allowances, privileges, minimum 16-month contracts. High salaries commensurate with experience and ability.

Send complete details of education, experience and past earnings to:

P-1657, Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

CHIEF DESIGN ENGINEERS

WE ARE IN IMMEDIATE NEED OF THE FOLLOWING DESIGN SPECIALISTS FOR EMPLOYMENT IN OUR LOS ANGELES OFFICES.

MECHANICAL:

Will require minimum of 10 years experience in design of plumbing; process piping; H&V; air conditioning; above and below-ground utilities; industrial equipment layout and design; instrumentation and controls. Some field experience desirable.

ELECTRICAL:

Will require minimum of 10 years experience in design of power transmission and distribution; lighting layout and design; instrumentation and controls; signal, alarm, telephone, public address and radio systems. Some field experience desirable.

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Now accepting applications from top-flight men with substantial successful experience as superintendents on varied competitively bid construction projects (primarily governmental) for general contractors. Must be fully qualified to assume full responsibility as superintendents on individual complex projects in the $10 million plus range, involving supervision of concrete work and coordination of mechanical, electrical, and other sub-contract work.

Exceptional opportunity to offer such men now and in the future. Presently operating on a nation-wide basis and expanding our operations substantially, we can offer aggressive and hard working superintendents excellent opportunities in this expansion program.

Write full details, covering experience (including cost figures on previous jobs), training, education, personal data, references, and salary requirements to

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Asbestos cement pipe
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Choice territories open
RW-1642, Engineering News-Record
Class Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

FOREIGN EMPLOYMENT

GENERAL SHIFT FOREMAN

B. S. degree metallurgical engineering or related field. Should have good experience different phases copper smelting, preferably in smelter incorporating use of roasters, reverberatory furnaces, converters, fire refining furnaces and Cottrells; also at least 1 year in supervisory position, handling men in smelter operations.

Excellent opportunity large copper company Chile, S. A. 2-year contract with transportation both ways and salary while traveling paid by company. In reply give complete details.

P-1655, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y.

WANTED

Two Graduate Engineers with four to six years experience for Municipal Engineering in rapidly growing community of 36,000 now expanding and upgrading its Bureau of Engineering. Liberal vacation, sick leave, Hospitalization and life insurance programs under a Civil Service System. Unexcelled opportunity for advancement.

Prefer some sanitary and/or municipal experience with elegibility for Professional Registration in North Dakota.

Send Resume and salary desired to:
DIRECTOR OF PUBLIC SERVICE
P. O. Box 900
GRAND FORKS, NORTH DAKOTA

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Positions available in consulting firm for Engineers, Architects and Architectural Draftsmen experienced in building design. Send personal information and experience record to:

STANLEY ENGINEERING COMPANY
Hershey Building Muscatine, Iowa

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Experienced in Illinois • Read and write legals, compute and prepare plats for property acquisition.

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Job open in newly organized department for estimator with extensive experience in marine and waterfront construction in the New York area. Capable of taking charge of preparing bids. P. E. license desirable. Salary open. Write full details to:
Room 1219
RAYMOND INTERNATIONAL INC.
140 Cedar St. New York 6, N. Y.

• POSITIONS WANTED
(Continued from preceding page)

Civil Engineer With Legal Education, 35. Nine years varied field & office experience obtained principally in South America. Reg. Calif. & N. Mex. Recent graduate Stanford Law School, LL.B. Desires position with possible management future in Calif. or southwest. PW-1727, Engineering News-Record.

Structural Engineer, P.E., B.C.E., experienced all phases bridge design, supervision of design and field inspection. Desire supervisory or design position with supervisory potential. U.S. or foreign. PW-1711, Engineering News-Record.

Construction Administrator, engineering graduate. Age 52. Top notch estimator, all trades including electrical and mechanical work. Experienced negotiator. Job supervisor and coordinator desires placement overseas where housing is available at or near job site. PW-1717, Engineering News-Record.

Blasting foreman with license. Heavy & light work. Well drilled hole. Prima corda with ammonia dynamite. PW-1722, Engineering News-Record.

Heavy Construction Engineer: If your weary shoulders are overburdened by responsibility, mine are broadened by 18 years of diversified field and office experience and will be available in July. Experience history on request. PW-1724, Engineering News-Record.

Structural Designer, reinforced concr., struct. steel, foundations. N.Y.C. or L.I. Resume upon request. PW-1733, Engineering News-Record.

Accountant Heavy Const. Roads, Dams and Airfields Exper. Cost, Payroll, Insurance, P. & L Statements office manager. Please state your offer in first letter for resume. PW-1748, Engineering News-Record.

• SELLING OPPORTUNITY WANTED

Manufacturers Representative available for Michigan. 20 years Sales experience with earth moving equipment and allied products. Age 39, currently in construction field. Available 30 days notice. RA-1677, Engineering News-Record.

SEARCHLIGHT SECTION

Send new ADS or inquiries to
Class. Adv. Div. of Engineering News-Record
P. O. Box 12, N. Y. 36, N. Y.

• SPECIAL SERVICE

Construction Estimating: All trades, 30 yrs. exp. Quantity surveys or complete estimates. Chas. M. Walker, B.S.R.E. 114½ E. Univ. Ave., Champaign, Ill.

• BUSINESS OPPORTUNITY

Consulting Engineering firm wishes to acquire established practice of professional engineer who wants to be less active or retire. BO-1749, Engineering News-Record.

• WANTED

Anything within reason that is wanted in the field served by Engineering News-Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

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Send New ADS or Inquiries to Class. Adv. of Engineering News-Record, P. O. Box 12, New York 36, N. Y., For June 4 Issue Closing May 26.

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3 Eimco 105 Tractor Excavators

1 Eimco 105 Front End Loader

4 Model D Tournapulls w/rear dump units

2 HD 6 Front End Loaders

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American R-25 Revolver Crane
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G.D. Air Tracs, Wagon Drills, Jackhammers, etc.
Hoists
Pumps (Variety)
Welding Machines—G.E. 300 Amp.

Send Inquiries

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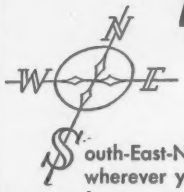

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Never a Bride

PROMOTERS OF MONORAILS as a means of mass transportation have a right to be a frustrated lot. Hardly a transport study of the past five years has failed to include a monorail system as one of the possibilities. Yet the final decision has favored some other form of transportation —or, more frequently, no decision was reached. To add to the frustrations, several fine test installations have been made, but each has carried the stigma of being an amusement park facility in the class of a pleasure ride.

All these near-misses—to recognition as a mass transportation facility of solid proportions—seem to suggest that the monorail is destined to be "always a bridesmaid, never a bride." Yet, just as perennial bridesmaids frequently make the grade, so the monorail is far from a hopeless cause. In fact, the latest development—Seattle's decision to build a mile-long monorail line to carry passengers from its downtown business section to the site of an exposition planned for 1961—is the most encouraging to date. This will be a monorail specifically for mass transportation—the first for this purpose in the U. S.

It must be recognized, too, that each of the faltering steps that monorail advocates have taken has advanced their cause in one way or another. The unsuccessful attempt of Los Angeles to get legislative approval for a $165-million system brought the monorail widespread public attention. Similar public education ensued when Sao Paulo, Brazil, attempted to promote a monorail line, and current transportation studies in Caracas, Venezuela, which include monorail as a possible solution, should develop new data of interest and significance.

The several test sections that have been built in various parts of the world have an even more beneficial function. Not only do they acquaint the public with what a monorail line looks like, they offer the opportunity to study and test structural and mechanical details against the day when a large installation may be made.

These test sections also afford a chance to observe the two basic types of monorails—cars supported on the rail and cars suspended from it. The suspended type is used on the 1,000-ft line at the Tokyo Zoo, the 4,000-ft line at the State Fair Grounds in Dallas and the 1,000-ft line in Houston. A 6,000-ft test installation in Cologne, Germany, is of the supported type, as is the mile-long monorail now under construction at Disneyland, near Los Angeles (ENR May 7, p. 34). The Cologne cars can be run at speeds up to 50 mph, which offers a further subject for study, while the Disneyland installation will permit observation of car operation on grades as steep as 7%, as well as on sharp curves.

All in all, many useful data are being accumulated on modern monorail design and operation. By thus removing as much uncertainty as possible from this aspect of the monorail problem, cities will be able to evaluate the broader factors of cost, convenience and efficiency with more assurance.

The only operating mass transportation monorail in the world today is in Wuppertal, Germany, near Berlin. It has carried nearly a million passengers in 50 years, but those being dreamed about today might well transport that many passengers in a single year. The current studies and test installations are a necessary first step. Sooner or later the bridesmaid will be a bride.

Design Against Sidesway!

THE FAILURE of a 25,000-sq-ft, one-story, steel frame industrial building in Westbury, N. Y. (ENR May 14, p. 29) appears to have been due to inadequate resistance to sidesway. It could have happened almost anywhere in the U. S., since few building codes have specific requirements for resistance to sidesway in low buildings.

The Westbury building had continuous girders atop the columns, and continuous beams on top of the girders. The girders were knee-braced to the columns, but there was no permanent bracing in the direction of the beams. The design is reported to have met the requirements of the local building code. And it also would have satisfied the codes of many other communities.

The New York City Code, for example, states: "All steel work shall be designed to sustain the total imposed dead load . . . together with the required live load. . . . All structures 100 ft high or less shall be investigated as to the need for wind bracing, but, in general, wind pressure in such structures may be neglected . . ."

The code of the American Institute of Steel Construction which has been adopted by reference by several model codes, including the New York State Building Code, also is not explicit on the need for lateral bracing in low buildings. It states: "Proper provision shall be made for stresses caused by wind both during erection and after completion of the building. . . . The allowable stresses . . . are based upon the steel frame being designed to carry a wind pressure of not less than 20 psf on the vertical projection of the finished structure." These words can hardly be interpreted as specifically requiring resistance to lateral forces.

Enough other failures of buildings due to inadequate resistance to sidesway have been reported to justify the conclusion that many building codes are not firm enough in their lateral-bracing requirements for low buildings. These codes should be modified to prevent similar failures in the future.

These failures should also serve as a reminder to engineers that building codes present minimum requirements. Designers have an obligation to their clients, construction workers and the general public to exceed these minimums when their knowledge and experience indicates such a step is advisable in the interests of safety.